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Pre-Calculus Readiness Packet

Rising 12th Graders • 60 Days • 5 Questions Per Day

Student Name: _____

Teacher / Parent: _____

Answers are located at the back of this packet.

How to Use This Packet

This packet prepares rising 12th graders for Pre-Calculus by reviewing the essential Algebra 2 and trigonometry foundations needed for success. Complete one page (5 questions) per day for 60 days.

Tips for Success:

- Complete one day per day — no rush, no pressure!
- Show all work — don't just write the final answer.
- Try all 5 questions before checking the Answer Key.
- The Answer Key is at the back — use it to check work after each day.
- Review any missed concepts before moving on to the next day.

Topics by Week:

Week 1	Foundations Review — Real Numbers, Exponents, Expressions & Polynomial Operations
Week 2	Factoring — GCF, Grouping, Trinomials & Special Patterns
Week 3	Rational Expressions — Simplifying, Operations & Equations
Week 4	Radicals, Rational Exponents & Complex Numbers
Week 5	Quadratic Equations & Graphing Parabolas
Week 6	Functions I — Notation, Domain/Range, Piecewise & Operations
Week 7	Functions II — Composition, Inverses, Symmetry & Rate of Change
Week 8	Polynomial Functions — Graphing, Division & Zeros
Week 9	Rational Functions — Asymptotes, Graphs & Inequalities
Week 10	Exponential & Logarithmic Functions
Week 11	Trigonometry Foundations — Right Triangles, Unit Circle & Radians
Week 12	Comprehensive Pre-Calculus Readiness Review

Day 1 – Real Numbers, Properties & Order of Operations

Name: _____

1. Evaluate: $4 + 3(2)^2 - 1$

Answer: _____

2. Classify -7 by number set (integer, rational, and/or real).

Answer: _____

3. Name the property shown: $3(x + 4) = 3x + 12$

Answer: _____

4. Evaluate: $|-9| + |4 - 10|$

Answer: _____

5. Simplify: $-2[5 - (3 - 7)]$

Answer: _____

Score: ____ / 5

Day 2 — Exponent Rules Review

Name: _____

1. Simplify: $x^4 \cdot x^3$

Answer: _____

2. Simplify: $(x^2)^5$

Answer: _____

3. Simplify: x^8 / x^2

Answer: _____

4. Simplify: $(2x^3y)^2$

Answer: _____

5. Evaluate: 2^{-3}

Answer: _____

Score: ____ / 5

Day 3 – Evaluating Algebraic Expressions

Name: _____

1. Evaluate $2x^2 - 3x + 5$ when $x = -2$.

Answer: _____

2. Evaluate $(a - b)^2$ when $a = 5$ and $b = 2$.

Answer: _____

3. Evaluate $\sqrt{a^2 + b^2}$ when $a = 3$ and $b = 4$.

Answer: _____

4. Evaluate $(3x - y) / (x + y)$ when $x = 4$ and $y = 2$.

Answer: _____

5. Evaluate $-b / (2a)$ when $a = 2$ and $b = -8$.

Answer: _____

Score: ____ / 5

Day 4 – Polynomial Operations – Add, Subtract & Multiply

Name: _____

1. Add: $(3x^2 - 2x + 5) + (x^2 + 4x - 1)$

Answer: _____

2. Subtract: $(5x^3 - 2x + 1) - (2x^3 + 3x - 4)$

Answer: _____

3. Multiply: $(x + 3)(x - 5)$

Answer: _____

4. Multiply: $(2x - 1)(x^2 + 3x - 2)$

Answer: _____

5. Expand: $(x - 4)^2$

Answer: _____

Score: ____ / 5

Day 5 – Mixed Review – Week 1

Name: _____

1. Evaluate: $5 - 2[3 + (4 - 6)^2]$

Answer: _____

2. Simplify: $(3x^2)(4x^5)$

Answer: _____

3. Evaluate $3x^2 + 2x - 1$ at $x = -1$.

Answer: _____

4. Add: $(4x - 7) + (-2x + 9)$

Answer: _____

5. Multiply: $(x + 2)(x - 2)$

Answer: _____

Score: ____ / 5

Day 6 – Factoring – GCF & Grouping

Name: _____

1. Factor: $6x^2 + 9x$

Answer: _____

2. Factor completely: $4x^3 - 12x^2 + 8x$

Answer: _____

3. Factor by grouping: $x^3 + 2x^2 + 3x + 6$

Answer: _____

4. Factor by grouping: $5xy + 10x - 3y - 6$

Answer: _____

5. Factor: $2x^2 - 4x$

Answer: _____

Score: ____ / 5

Day 7 – Factoring Trinomials

Name: _____

1. Factor: $x^2 + 7x + 12$

Answer: _____

2. Factor: $x^2 - 3x - 10$

Answer: _____

3. Factor: $2x^2 + 5x + 3$

Answer: _____

4. Factor: $3x^2 - 10x + 8$

Answer: _____

5. Factor: $x^2 - 8x + 16$

Answer: _____

Score: ____ / 5

Day 8 – Special Factoring Patterns

Name: _____

1. Factor: $x^2 - 49$

Answer: _____

2. Factor: $9x^2 - 25$

Answer: _____

3. Factor: $x^3 - 8$

Answer: _____

4. Factor: $x^3 + 27$

Answer: _____

5. Factor: $4x^2 - 1$

Answer: _____

Score: ____ / 5

Day 9 – Factoring – Mixed & Higher Degree

Name: _____

1. Factor completely: $2x^3 + 8x^2$

Answer: _____

2. Factor completely: $x^4 - 16$

Answer: _____

3. Factor completely: $3x^2 + 12x + 12$

Answer: _____

4. Factor completely: $x^3 - 3x^2 - 4x + 12$

Answer: _____

5. Factor: $6x^2 - x - 2$

Answer: _____

Score: ____ / 5

Day 10 – Mixed Review – Week 2

Name: _____

1. Factor: $x^2 - x - 12$

Answer: _____

2. Factor: $16x^2 - 9$

Answer: _____

3. Factor: $5x^2 + 15x$

Answer: _____

4. Factor: $x^3 - 1$

Answer: _____

5. Factor completely: $2x^3 - 8x$

Answer: _____

Score: ____ / 5

Day 11 – Simplifying Rational Expressions

Name: _____

1. Simplify: $4x^2 / 8x^5$

Answer: _____

2. Simplify: $(x^2 - 9) / (x + 3)$

Answer: _____

3. Simplify: $(x^2 - 5x + 6) / (x - 2)$

Answer: _____

4. Simplify: $(3x + 6) / (x + 2)$

Answer: _____

5. Simplify: $(x^2 - 4x) / (x^2 - 16)$

Answer: _____

Score: ____ / 5

Day 12 — Multiplying & Dividing Rational Expressions

Name: _____

1. Multiply: $(2x/3) \cdot (9/x^2)$

Answer: _____

2. Multiply: $[(x + 2)/(x - 1)] \cdot [(x - 1)/(x + 5)]$

Answer: _____

3. Divide: $[(x^2 - 1)/x] \div [(x + 1)/x^2]$

Answer: _____

4. Multiply: $[(x^2 - 4)/(x + 3)] \cdot [1/(x - 2)]$

Answer: _____

5. Divide: $[4x/(x + 1)] \div [8x^2/(x^2 - 1)]$

Answer: _____

Score: ____ / 5

Day 13 — Adding & Subtracting Rational Expressions

Name: _____

1. Add: $2/x + 3/x$

Answer: _____

2. Add: $1/(x + 1) + 2/(x - 1)$

Answer: _____

3. Subtract: $5/(x - 2) - 3/(x - 2)$

Answer: _____

4. Add: $x/(x + 2) + 1$

Answer: _____

5. Subtract: $4/x - 1/(2x)$

Answer: _____

Score: ____ / 5

Day 14 – Solving Rational Equations

Name: _____

1. Solve: $3/x = 6$

Answer: _____

2. Solve: $(x + 1)/2 = (x - 1)/3$

Answer: _____

3. Solve: $2/x + 1/3 = 1$

Answer: _____

4. Solve: $5/(x - 2) = 10/(x + 1)$

Answer: _____

5. Solve: $x/(x - 3) = 2 + 3/(x - 3)$

Answer: _____

Score: ____ / 5

Day 15 — Mixed Review — Week 3

Name: _____

1. Simplify: $(x^2 - 25)/(x^2 - 5x)$

Answer: _____

2. Multiply: $[(x - 3)/4] \cdot [8/(x - 3)]$

Answer: _____

3. Add: $3/(x + 1) + 2/(x + 1)$

Answer: _____

4. Solve: $4/x = 2/(x + 1)$

Answer: _____

5. Divide: $[(x^2 - 1)/x] \div [(x - 1)/x^2]$

Answer: _____

Score: ____ / 5

Day 16 — Simplifying Radicals

Name: _____

1. Simplify: $\sqrt{75}$

Answer: _____

2. Simplify: $\sqrt{(50x^4)}$

Answer: _____

3. Simplify: $\sqrt[3]{54}$

Answer: _____

4. Simplify: $\sqrt{8} \cdot \sqrt{2}$

Answer: _____

5. Simplify: $\sqrt{(x^6)}$ (assume $x \geq 0$)

Answer: _____

Score: ____ / 5

Day 17 — Rational Exponents

Name: _____

1. Write in radical form: $x^{1/3}$

Answer: _____

2. Write in exponential form: $(\sqrt{x})^2$

Answer: _____

3. Evaluate: $27^{1/3}$

Answer: _____

4. Evaluate: $16^{3/4}$

Answer: _____

5. Simplify: $x^{1/2} \cdot x^{3/2}$

Answer: _____

Score: ____ / 5

Day 18 — Operations with Radicals

Name: _____

1. Simplify: $3\sqrt{2} + 5\sqrt{2}$

Answer: _____

2. Simplify: $2\sqrt{3} \cdot 4\sqrt{6}$

Answer: _____

3. Simplify: $\sqrt{5}(\sqrt{5} + 3)$

Answer: _____

4. Rationalize the denominator: $1/\sqrt{3}$

Answer: _____

5. Rationalize the denominator: $2/(\sqrt{5} - 1)$

Answer: _____

Score: ____ / 5

Day 19 — Complex Numbers

Name: _____

1. Simplify: $\sqrt{-16}$

Answer: _____

2. Add: $(3 + 2i) + (1 - 4i)$

Answer: _____

3. Multiply: $(2 + i)(3 - i)$

Answer: _____

4. Evaluate i^2 , i^3 , and i^4 .

Answer: _____

5. Subtract: $(4 + 3i) - (1 + i)$

Answer: _____

Score: ____ / 5

Day 20 — Mixed Review — Weeks 1-4

Name: _____

1. Factor: $x^2 - 16$

Answer: _____

2. Simplify: $\sqrt{48}$

Answer: _____

3. Solve: $2/x = 8$

Answer: _____

4. Multiply: $(3 + 2i)(1 - i)$

Answer: _____

5. Evaluate: $8^{2/3}$

Answer: _____

Score: ____ / 5

Day 21 — Solving Quadratics by Factoring

Name: _____

1. Solve: $x^2 - 5x + 6 = 0$

Answer: _____

2. Solve: $x^2 - 9 = 0$

Answer: _____

3. Solve: $x^2 + 2x - 15 = 0$

Answer: _____

4. Solve: $2x^2 - 8x = 0$

Answer: _____

5. Solve: $x^2 - 6x + 9 = 0$

Answer: _____

Score: ____ / 5

Day 22 — Completing the Square

Name: _____

1. Solve by completing the square: $x^2 + 6x + 5 = 0$

Answer: _____

2. Solve by completing the square: $x^2 - 4x - 1 = 0$

Answer: _____

3. Write in vertex form: $x^2 + 8x + 10$

Answer: _____

4. Solve by completing the square: $x^2 + 2x - 8 = 0$

Answer: _____

5. Write in vertex form: $x^2 - 2x + 3$

Answer: _____

Score: ____ / 5

Day 23 – Quadratic Formula & Discriminant

Name: _____

1. Solve using the quadratic formula: $x^2 - 3x - 4 = 0$

Answer: _____

2. Solve using the quadratic formula: $2x^2 + 3x - 2 = 0$

Answer: _____

3. Find the discriminant of $x^2 + 4x + 5 = 0$.

Answer: _____

4. How many real solutions does $4x^2 - 12x + 9 = 0$ have?

Answer: _____

5. Solve: $x^2 + x + 1 = 0$

Answer: _____

Score: ____ / 5

Day 24 — Graphing Quadratics — Vertex Form

Name: _____

1. Find the vertex of $y = (x - 2)^2 + 5$.

Answer: _____

2. Find the vertex of $y = x^2 + 6x + 8$ by completing the square.

Answer: _____

3. Does the parabola $y = -2(x + 1)^2 + 3$ open up or down?

Answer: _____

4. Find the axis of symmetry of $y = x^2 - 4x + 1$.

Answer: _____

5. Find the y-intercept of $y = (x - 3)^2 - 4$.

Answer: _____

Score: ____ / 5

Day 25 — Mixed Review — Week 5

Name: _____

1. Solve: $x^2 - 7x + 10 = 0$

Answer: _____

2. Solve using the quadratic formula: $x^2 - 2x - 2 = 0$

Answer: _____

3. Find the vertex of $y = 2(x - 1)^2 - 3$.

Answer: _____

4. Find the discriminant of $3x^2 - 2x + 5 = 0$.

Answer: _____

5. Write $x^2 + 4x$ in vertex form.

Answer: _____

Score: ____ / 5

Day 26 — Function Notation & Evaluation

Name: _____

1. If $f(x) = 2x - 5$, find $f(3)$.

Answer: _____

2. If $f(x) = x^2 - 4x$, find $f(-2)$.

Answer: _____

3. If $g(x) = \sqrt{x + 1}$, find $g(8)$.

Answer: _____

4. If $f(x) = 3x + 1$, find $f(a + 1)$.

Answer: _____

5. If $f(x) = x^2 + 1$, find $f(2) - f(1)$.

Answer: _____

Score: ____ / 5

Day 27 — Domain & Range

Name: _____

1. Find the domain of $f(x) = \sqrt{x - 4}$.

Answer: _____

2. Find the domain of $f(x) = 1/(x - 3)$.

Answer: _____

3. Find the domain of $f(x) = \sqrt{9 - x^2}$.

Answer: _____

4. Find the range of $f(x) = x^2$.

Answer: _____

5. Find the domain of $f(x) = (x + 2)/(x^2 - 4)$.

Answer: _____

Score: ____ / 5

Day 28 — Piecewise Functions

Name: _____

1. Given $f(x) = x + 2$ if $x < 0$, and x^2 if $x \geq 0$, find $f(-3)$.

Answer: _____

2. Using the same $f(x)$, find $f(2)$.

Answer: _____

3. Using the same $f(x)$, find $f(0)$.

Answer: _____

4. Given $g(x) = 2x$ if $x \leq 1$, and $x + 3$ if $x > 1$, find $g(1)$.

Answer: _____

5. Using the same $g(x)$, find $g(4)$.

Answer: _____

Score: ____ / 5

Day 29 — Operations on Functions

Name: _____

1. If $f(x) = x + 2$ and $g(x) = x - 3$, find $(f + g)(x)$.

Answer: _____

2. If $f(x) = x^2$ and $g(x) = x + 1$, find $(f - g)(x)$.

Answer: _____

3. If $f(x) = x$ and $g(x) = x + 4$, find $(f \cdot g)(x)$.

Answer: _____

4. If $f(x) = x^2 - 1$ and $g(x) = x - 1$, find and simplify $(f/g)(x)$.

Answer: _____

5. If $f(x) = 2x$ and $g(x) = 3$, find $(f + g)(2)$.

Answer: _____

Score: ____ / 5

Day 30 — Mixed Review — Week 6

Name: _____

1. If $f(x) = 3x - 1$, find $f(0)$ and $f(2)$.

Answer: _____

2. Find the domain of $f(x) = \sqrt{2x - 6}$.

Answer: _____

3. Given $f(x) = 3$ if $x < 2$, and $x + 1$ if $x \geq 2$, find $f(2)$.

Answer: _____

4. If $f(x) = x^2 + 2$ and $g(x) = 3x$, find $(f - g)(x)$.

Answer: _____

5. Find the range of $f(x) = -x^2 + 4$.

Answer: _____

Score: ____ / 5

Day 31 — Composition of Functions

Name: _____

1. If $f(x) = 2x + 1$ and $g(x) = x^2$, find $(f \circ g)(x)$.

Answer: _____

2. Using the same f and g , find $(g \circ f)(x)$.

Answer: _____

3. If $f(x) = x + 3$ and $g(x) = x - 3$, find $(f \circ g)(5)$.

Answer: _____

4. If $f(x) = \sqrt{x}$ and $g(x) = x - 4$, find $(f \circ g)(13)$.

Answer: _____

5. If $f(x) = x^2$ and $g(x) = 2x + 1$, find $(f \circ g)(0)$.

Answer: _____

Score: ____ / 5

Day 32 – Inverse Functions

Name: _____

1. Find the inverse of $f(x) = 2x + 3$.

Answer: _____

2. Find the inverse of $f(x) = (x - 1)/4$.

Answer: _____

3. What is the inverse of $f(x) = x^3$?

Answer: _____

4. If $f(2) = 7$, what is $f^{-1}(7)$?

Answer: _____

5. Find the inverse of $f(x) = 3x - 6$.

Answer: _____

Score: ____ / 5

Day 33 — Even/Odd Functions & Symmetry

Name: _____

1. Is $f(x) = x^2$ even, odd, or neither?

Answer: _____

2. Is $f(x) = x^3$ even, odd, or neither?

Answer: _____

3. Is $f(x) = x^2 + x$ even, odd, or neither?

Answer: _____

4. If $f(x)$ is even, what is true about $f(-x)$?

Answer: _____

5. Is $f(x) = |x|$ even, odd, or neither?

Answer: _____

Score: ____ / 5

Day 34 — Average Rate of Change

Name: _____

1. Find the average rate of change of $f(x) = x^2$ from $x = 1$ to $x = 3$.

Answer: _____

2. Find the average rate of change of $f(x) = 2x + 5$ from $x = 0$ to $x = 4$.

Answer: _____

3. Find the average rate of change of $f(x) = x^2 - 1$ from $x = -1$ to $x = 2$.

Answer: _____

4. Find the average rate of change of $f(x) = \sqrt{x}$ from $x = 4$ to $x = 9$.

Answer: _____

5. Find the average rate of change of $f(x) = x^3$ from $x = 0$ to $x = 2$.

Answer: _____

Score: ____ / 5

Day 35 — Mixed Review — Week 7

Name: _____

1. If $f(x) = x - 2$ and $g(x) = x^2$, find $(f \circ g)(3)$.

Answer: _____

2. Find the inverse of $f(x) = 5x - 2$.

Answer: _____

3. Is $f(x) = x^4 - x^2$ even, odd, or neither?

Answer: _____

4. Find the average rate of change of $f(x) = x^2 + 1$ from $x = 0$ to $x = 3$.

Answer: _____

5. If $f(x) = 2x$ and $g(x) = x + 1$, find $(g \circ f)(x)$.

Answer: _____

Score: ____ / 5

Day 36 — Polynomial Graphs & End Behavior

Name: _____

1. Describe the end behavior of $f(x) = x^3$ as $x \rightarrow \infty$ and $x \rightarrow -\infty$.

Answer: _____

2. Describe the end behavior of $f(x) = -2x^4 + 3x$.

Answer: _____

3. What is the degree and leading coefficient of $f(x) = 3x^5 - 2x^2 + 1$?

Answer: _____

4. What is the maximum number of turning points a degree-4 polynomial can have?

Answer: _____

5. As $x \rightarrow \infty$, does $f(x) = x^4 - x^2$ increase or decrease?

Answer: _____

Score: ____ / 5

Day 37 — Synthetic Division

Name: _____

1. Divide $x^2 + 5x + 6$ by $(x + 2)$ using synthetic division.

Answer: _____

2. Divide $x^3 - 2x^2 - 5x + 6$ by $(x - 1)$.

Answer: _____

3. Divide $x^3 + 27$ by $(x + 3)$.

Answer: _____

4. Divide $2x^3 - 3x^2 + 4x - 1$ by $(x - 1)$.

Answer: _____

5. Divide $x^3 - x^2 - 4$ by $(x - 2)$.

Answer: _____

Score: ____ / 5

Day 38 — Remainder & Factor Theorems

Name: _____

1. Use the Remainder Theorem to find $f(2)$ if $f(x) = x^3 - 3x^2 + 2x - 1$.

Answer: _____

2. Is $(x - 1)$ a factor of $f(x) = x^3 - 1$?

Answer: _____

3. Is $(x + 2)$ a factor of $f(x) = x^3 + 2x^2 - x - 2$?

Answer: _____

4. Find the remainder when $x^4 - 1$ is divided by $(x - 1)$.

Answer: _____

5. Find k such that $(x - 2)$ is a factor of $x^2 + kx - 6$.

Answer: _____

Score: ____ / 5

Day 39 — Finding Zeros of Polynomials

Name: _____

1. Find all zeros of $f(x) = x^2 - 9$.

Answer: _____

2. Find all zeros of $f(x) = x^3 - 4x$.

Answer: _____

3. Find all zeros of $f(x) = (x - 1)(x + 2)(x - 3)$.

Answer: _____

4. $f(x) = x^3 - x^2 - 4x + 4$ has a zero at $x = 1$. Find the remaining zeros.

Answer: _____

5. How many zeros (counting multiplicity) does a degree-4 polynomial have?

Answer: _____

Score: ____ / 5

Day 40 — Mixed Review — Weeks 7-8

Name: _____

1. Find the inverse of $f(x) = 4x + 1$.

Answer: _____

2. Divide $x^2 - 7x + 12$ by $(x - 3)$.

Answer: _____

3. Find the average rate of change of $f(x) = x^2$ from $x = 2$ to $x = 5$.

Answer: _____

4. Find all zeros of $f(x) = x^2 - x - 6$.

Answer: _____

5. Describe the end behavior of $f(x) = -x^3 + 1$.

Answer: _____

Score: ____ / 5

Day 41 — Rational Functions — Domain Restrictions

Name: _____

1. Find the domain of $f(x) = (x + 1)/(x - 2)$.

Answer: _____

2. Find the domain of $f(x) = (x^2 - 1)/(x^2 - 4)$.

Answer: _____

3. Simplify $f(x) = (x^2 - 9)/(x - 3)$ and state the restriction.

Answer: _____

4. Find the domain of $f(x) = x/(x^2 + 1)$.

Answer: _____

5. Find the domain of $f(x) = (x - 1)/(x^2 - 5x + 6)$.

Answer: _____

Score: ____ / 5

Day 42 – Vertical & Horizontal Asymptotes

Name: _____

1. Find the vertical asymptote of $f(x) = 1/(x - 3)$.

Answer: _____

2. Find the horizontal asymptote of $f(x) = (2x + 1)/(x - 4)$.

Answer: _____

3. Find the horizontal asymptote of $f(x) = 3x^2/(x^2 + 1)$.

Answer: _____

4. Find the horizontal asymptote of $f(x) = 5/(x^2 + 2)$.

Answer: _____

5. Find the vertical asymptote of $f(x) = (x + 2)/(x^2 - 4)$.

Answer: _____

Score: ____ / 5

Day 43 – Graphing Rational Functions

Name: _____

1. Find the x-intercept of $f(x) = (x - 5)/(x + 1)$.

Answer: _____

2. Find the y-intercept of $f(x) = (x + 3)/(x - 2)$.

Answer: _____

3. Does $f(x) = 1/x$ have any x-intercepts?

Answer: _____

4. For $f(x) = (x^2 - 1)/(x - 1)$, identify the hole in the graph.

Answer: _____

5. Find the horizontal asymptote of $f(x) = 2x/(x + 5)$.

Answer: _____

Score: ____ / 5

Day 44 – Solving Rational Inequalities

Name: _____

1. Solve: $(x - 2)/(x + 1) > 0$

Answer: _____

2. Solve: $(x + 3)/(x - 1) \leq 0$

Answer: _____

3. Solve: $1/x > 0$

Answer: _____

4. Solve: $(x - 4)/(x + 2) \geq 0$

Answer: _____

5. Solve: $x/(x - 3) < 0$

Answer: _____

Score: ____ / 5

Day 45 — Mixed Review — Week 9

Name: _____

1. Find the domain of $f(x) = (x + 4)/(x^2 - 16)$.

Answer: _____

2. Find the horizontal asymptote of $f(x) = (4x - 1)/(2x + 3)$.

Answer: _____

3. Find the vertical asymptote of $f(x) = 3/(x + 5)$.

Answer: _____

4. Solve: $(x - 1)/(x + 4) > 0$

Answer: _____

5. Find the x-intercept of $f(x) = (2x - 6)/(x + 1)$.

Answer: _____

Score: ____ / 5

Day 46 — Exponential Functions & Growth/Decay

Name: _____

1. Evaluate $f(x) = 2^x$ at $x = 4$.

Answer: _____

2. Evaluate $f(x) = 3 \cdot 2^x$ at $x = 0$.

Answer: _____

3. Is $f(x) = (1/2)^x$ growth or decay?

Answer: _____

4. A population grows according to $P(t) = 500(1.05)^t$. Find $P(0)$.

Answer: _____

5. Simplify: $4^x \cdot 4^2$

Answer: _____

Score: ____ / 5

Day 47 — Introduction to Logarithms

Name: _____

1. Rewrite $2^3 = 8$ in logarithmic form.

Answer: _____

2. Evaluate $\log_2 8$.

Answer: _____

3. Evaluate $\log_{10} 100$.

Answer: _____

4. Evaluate $\log_5 1$.

Answer: _____

5. Rewrite $\log_3 9 = 2$ in exponential form.

Answer: _____

Score: ____ / 5

Day 48 — Properties of Logarithms

Name: _____

1. Expand: $\log(xy)$

Answer: _____

2. Expand: $\log(x/y)$

Answer: _____

3. Expand: $\log(x^3)$

Answer: _____

4. Combine into a single logarithm: $\log x + \log y - \log z$

Answer: _____

5. Simplify: $\log_2 8 + \log_2 4$

Answer: _____

Score: ____ / 5

Day 49 – Solving Exponential Equations

Name: _____

1. Solve: $2^x = 16$

Answer: _____

2. Solve: $3^{x+1} = 27$

Answer: _____

3. Solve: $5^{2x} = 25$

Answer: _____

4. Solve: $4^x = 8$

Answer: _____

5. Solve: $2^{x-1} = 1$

Answer: _____

Score: ____ / 5

Day 50 — Mixed Review — Week 10 (Logarithmic Equations)

Name: _____

1. Solve: $\log_2 x = 4$

Answer: _____

2. Solve: $\log x = 2$

Answer: _____

3. Solve: $\log_3(x + 1) = 2$

Answer: _____

4. Evaluate: $\log_4 16$

Answer: _____

5. Solve: $2^x = 32$

Answer: _____

Score: ____ / 5

Day 51 — Right Triangle Trig (SOH-CAH-TOA)

Name: _____

1. In a right triangle, the opposite side is 3 and the hypotenuse is 5. Find $\sin \theta$.

Answer: _____

2. If adjacent = 4 and hypotenuse = 5, find $\cos \theta$.

Answer: _____

3. If opposite = 3 and adjacent = 4, find $\tan \theta$.

Answer: _____

4. A right triangle has legs 6 and 8 and hypotenuse 10. Find $\sin \theta$ for the angle opposite the side of length 6.

Answer: _____

5. Find the hypotenuse of a right triangle with legs 5 and 12.

Answer: _____

Score: ____ / 5

Day 52 — Special Right Triangles & the Unit Circle

Name: _____

1. In a 45-45-90 triangle with legs of length 1, find the hypotenuse.

Answer: _____

2. In a 30-60-90 triangle, if the shortest side is 1, find the side opposite the 60° angle.

Answer: _____

3. What are the coordinates of the point on the unit circle at angle 0° ?

Answer: _____

4. What are the coordinates of the point on the unit circle at angle 90° ?

Answer: _____

5. Find $\sin(45^\circ)$.

Answer: _____

Score: ____ / 5

Day 53 — Radians & Degree Conversion

Name: _____

1. Convert 180° to radians.

Answer: _____

2. Convert 90° to radians.

Answer: _____

3. Convert $\pi/3$ radians to degrees.

Answer: _____

4. Convert 270° to radians.

Answer: _____

5. Convert $\pi/6$ radians to degrees.

Answer: _____

Score: ____ / 5

Day 54 — Evaluating Trig Functions of Common Angles

Name: _____

1. Find $\sin(30^\circ)$.

Answer: _____

2. Find $\cos(60^\circ)$.

Answer: _____

3. Find $\tan(45^\circ)$.

Answer: _____

4. Find $\sin(90^\circ)$.

Answer: _____

5. Find $\cos(0^\circ)$.

Answer: _____

Score: ____ / 5

Day 55 — Mixed Review — Week 11

Name: _____

1. Convert 120° to radians.

Answer: _____

2. Find $\cos(30^\circ)$.

Answer: _____

3. In a right triangle, the opposite side is 8 and the hypotenuse is 17. Find $\cos \theta$.

Answer: _____

4. Find $\tan(60^\circ)$.

Answer: _____

5. Find $\sin(\pi/2)$.

Answer: _____

Score: ____ / 5

Day 56 — Comprehensive Review I

Name: _____

1. Factor: $x^2 - 2x - 15$

Answer: _____

2. Simplify: $(3x^2y)(2xy^3)$

Answer: _____

3. Solve: $x^2 - 6x + 8 = 0$

Answer: _____

4. Simplify: $\sqrt{72}$

Answer: _____

5. If $f(x) = 2x^2 - x$, find $f(-1)$.

Answer: _____

Score: ____ / 5

Day 57 — Comprehensive Review II

Name: _____

1. Find the domain of $f(x) = \sqrt{x - 1}$.

Answer: _____

2. Simplify: $(x^2 - 4)/(x + 2)$

Answer: _____

3. Solve: $2^x = 64$

Answer: _____

4. Find the vertex of $y = (x + 2)^2 - 1$.

Answer: _____

5. Find the inverse of $f(x) = x - 7$.

Answer: _____

Score: ____ / 5

Day 58 — Comprehensive Review III

Name: _____

1. Multiply: $(2 + i)(2 - i)$

Answer: _____

2. Find the horizontal asymptote of $f(x) = \frac{3x}{x + 1}$.

Answer: _____

3. Solve: $\log_2 x = 5$

Answer: _____

4. Convert 45° to radians.

Answer: _____

5. If $f(x) = x + 1$ and $g(x) = x^2$, find $(f \circ g)(2)$.

Answer: _____

Score: ____ / 5

Day 59 — Comprehensive Review IV

Name: _____

1. Factor completely: $2x^3 - 2x$

Answer: _____

2. Solve: $x^2 + 4x - 5 = 0$

Answer: _____

3. Find $\sin(60^\circ)$.

Answer: _____

4. Simplify: $(4x^3 - 2x)/(2x)$

Answer: _____

5. Find the discriminant of $2x^2 + 3x + 5 = 0$.

Answer: _____

Score: ____ / 5

Day 60 — Pre-Calc Ready! (Final Comprehensive Review)

Name: _____

1. Solve: $x^2 - 5x + 6 = 0$

Answer: _____

2. Find the inverse of $f(x) = 3x - 9$.

Answer: _____

3. Simplify: $(3 + 2i) + (4 - 5i)$

Answer: _____

4. Find the asymptotes of $f(x) = (x - 1)/(x + 3)$.

Answer: _____

5. Convert $5\pi/6$ to degrees, then find the sine of that angle.

Answer: _____

Score: ____ / 5

ANSWER KEY

LatePass.com Pre-Calculus Readiness Packet — Rising 12th Grade

Check your answers after completing each day!

Day 1 — Real Numbers, Properties & Order of Operations

1. 15
2. Integer, rational, and real (not a whole or natural number)
3. Distributive Property
4. 15
5. -18

Day 2 — Exponent Rules Review

1. x^7
2. x^{10}
3. x^6
4. $4x^6y^2$
5. $1/8$

Day 3 — Evaluating Algebraic Expressions

1. 19
2. 9
3. 5
4. $5/3$
5. 2

Day 4 — Polynomial Operations — Add, Subtract & Multiply

1. $4x^2 + 2x + 4$
2. $3x^3 - 5x + 5$
3. $x^2 - 2x - 15$
4. $2x^3 + 5x^2 - 7x + 2$
5. $x^2 - 8x + 16$

Day 5 — Mixed Review — Week 1

1. -9
2. $12x^7$
3. 0
4. $2x + 2$
5. $x^2 - 4$

Day 6 — Factoring — GCF & Grouping

1. $3x(2x + 3)$
2. $4x(x - 1)(x - 2)$
3. $(x + 2)(x^2 + 3)$
4. $(y + 2)(5x - 3)$
5. $2x(x - 2)$

Day 7 — Factoring Trinomials

1. $(x + 3)(x + 4)$
2. $(x - 5)(x + 2)$
3. $(2x + 3)(x + 1)$
4. $(3x - 4)(x - 2)$
5. $(x - 4)^2$

Day 8 — Special Factoring Patterns

1. $(x - 7)(x + 7)$
2. $(3x - 5)(3x + 5)$
3. $(x - 2)(x^2 + 2x + 4)$
4. $(x + 3)(x^2 - 3x + 9)$
5. $(2x - 1)(2x + 1)$

Day 9 — Factoring — Mixed & Higher Degree

1. $2x^2(x + 4)$
2. $(x - 2)(x + 2)(x^2 + 4)$
3. $3(x + 2)^2$
4. $(x - 3)(x - 2)(x + 2)$
5. $(3x - 2)(2x + 1)$

Day 10 — Mixed Review — Week 2

1. $(x - 4)(x + 3)$
2. $(4x - 3)(4x + 3)$
3. $5x(x + 3)$
4. $(x - 1)(x^2 + x + 1)$
5. $2x(x - 2)(x + 2)$

Day 11 — Simplifying Rational Expressions

1. $1 / (2x^3)$
2. $x - 3$
3. $x - 3$
4. 3
5. $x / (x + 4)$

Day 12 — Multiplying & Dividing Rational Expressions

1. $6/x$
2. $(x + 2)/(x + 5)$
3. $x(x - 1)$
4. $(x + 2)/(x + 3)$
5. $(x - 1)/(2x)$

Day 13 — Adding & Subtracting Rational Expressions

1. $5/x$
2. $(3x + 1)/(x^2 - 1)$
3. $2/(x - 2)$
4. $(2x + 2)/(x + 2)$
5. $7/(2x)$

Day 14 — Solving Rational Equations

1. $x = 1/2$
2. $x = -5$
3. $x = 3$
4. $x = 5$
5. No solution ($x = 3$ is extraneous)

Day 15 — Mixed Review — Week 3

1. $(x + 5)/x$
2. 2
3. $5/(x + 1)$
4. $x = -2$
5. $x(x + 1)$

Day 16 — Simplifying Radicals

1. $5\sqrt{3}$
2. $5x^2\sqrt{2}$
3. $3\sqrt[3]{2}$
4. 4
5. x^3

Day 17 — Rational Exponents

1. $\sqrt[3]{x}$
2. $x^{2/3}$
3. 3
4. 8
5. x^2

Day 18 — Operations with Radicals

1. $8\sqrt{2}$
2. $24\sqrt{2}$
3. $5 + 3\sqrt{5}$
4. $\sqrt{3}/3$
5. $(\sqrt{5} + 1)/2$

Day 19 — Complex Numbers

1. $4i$
2. $4 - 2i$
3. $7 + i$
4. $-1, -i, 1$
5. $3 + 2i$

Day 20 — Mixed Review — Weeks 1-4

1. $(x - 4)(x + 4)$
2. $4\sqrt{3}$
3. $x = 1/4$
4. $5 - i$
5. 4

Day 21 — Solving Quadratics by Factoring

1. $x = 2, 3$
2. $x = \pm 3$
3. $x = -5, 3$
4. $x = 0, 4$
5. $x = 3$ (double root)

Day 22 — Completing the Square

1. $x = -1, -5$
2. $x = 2 \pm \sqrt{5}$
3. $(x + 4)^2 - 6$
4. $x = 2, -4$
5. $(x - 1)^2 + 2$

Day 23 — Quadratic Formula & Discriminant

1. $x = 4, -1$
2. $x = 1/2, -2$
3. -4
4. One real solution (discriminant = 0)
5. $x = (-1 \pm i\sqrt{3})/2$

Day 24 — Graphing Quadratics — Vertex Form

1. (2, 5)
2. (-3, -1)
3. Down
4. $x = 2$
5. (0, 5)

Day 25 — Mixed Review — Week 5

1. $x = 2, 5$
2. $x = 1 \pm \sqrt{3}$
3. (1, -3)
4. -56 (no real solutions)
5. $(x + 2)^2 - 4$

Day 26 — Function Notation & Evaluation

1. 1
2. 12
3. 3
4. $3a + 4$
5. 3

Day 27 — Domain & Range

1. $x \geq 4$
2. All reals except $x = 3$
3. $-3 \leq x \leq 3$
4. $y \geq 0$
5. All reals except $x = \pm 2$

Day 28 — Piecewise Functions

1. -1
2. 4
3. 0
4. 2
5. 7

Day 29 — Operations on Functions

1. $2x - 1$
2. $x^2 - x - 1$
3. $x^2 + 4x$
4. $x + 1$
5. 7

Day 30 — Mixed Review — Week 6

1. -1 and 5
2. $x \geq 3$
3. 3
4. $x^2 - 3x + 2$
5. $y \leq 4$

Day 31 — Composition of Functions

1. $2x^2 + 1$
2. $4x^2 + 4x + 1$
3. 5
4. 3
5. 1

Day 32 — Inverse Functions

1. $f^{-1}(x) = (x - 3)/2$
2. $f^{-1}(x) = 4x + 1$
3. $f^{-1}(x) = \sqrt[3]{x}$
4. 2
5. $f^{-1}(x) = (x + 6)/3$

Day 33 — Even/Odd Functions & Symmetry

1. Even
2. Odd
3. Neither
4. $f(-x) = f(x)$
5. Even

Day 34 — Average Rate of Change

1. 4
2. 2
3. 1
4. $1/5$
5. 4

Day 35 — Mixed Review — Week 7

1. 7
2. $f^{-1}(x) = (x + 2)/5$
3. Even
4. 3
5. $2x + 1$

Day 36 — Polynomial Graphs & End Behavior

1. $f(x) \rightarrow \infty$ and $f(x) \rightarrow -\infty$
2. As $x \rightarrow \pm\infty$, $f(x) \rightarrow -\infty$
3. Degree 5, leading coefficient 3
4. 3
5. Increase ($f(x) \rightarrow \infty$)

Day 37 — Synthetic Division

1. $x + 3$
2. $x^2 - x - 6$
3. $x^2 - 3x + 9$
4. Quotient $2x^2 - x + 3$, remainder 2
5. $x^2 + x + 2$, remainder 0

Day 38 — Remainder & Factor Theorems

1. -1
2. Yes, since $f(1) = 0$
3. Yes, since $f(-2) = 0$
4. 0
5. $k = 1$

Day 39 — Finding Zeros of Polynomials

1. $x = 3, -3$
2. $x = 0, 2, -2$
3. $x = 1, -2, 3$
4. $x = 2$ and $x = -2$
5. 4

Day 40 — Mixed Review — Weeks 7-8

1. $f^{-1}(x) = (x - 1)/4$
2. $x - 4$
3. 7
4. $x = 3, -2$
5. As $x \rightarrow \infty$, $f(x) \rightarrow -\infty$; as $x \rightarrow -\infty$, $f(x) \rightarrow \infty$

Day 41 — Rational Functions — Domain Restrictions

1. All reals except $x = 2$
2. All reals except $x = \pm 2$
3. $f(x) = x + 3$, $x \neq 3$
4. All real numbers
5. All reals except $x = 2, 3$

Day 42 — Vertical & Horizontal Asymptotes

1. $x = 3$
2. $y = 2$
3. $y = 3$
4. $y = 0$
5. $x = 2$ ($x = -2$ is a hole)

Day 43 — Graphing Rational Functions

1. $x = 5$
2. $(0, -3/2)$
3. No
4. A hole at $(1, 2)$
5. $y = 2$

Day 44 — Solving Rational Inequalities

1. $x < -1$ or $x > 2$
2. $-3 \leq x < 1$
3. $x > 0$
4. $x < -2$ or $x \geq 4$
5. $0 < x < 3$

Day 45 — Mixed Review — Week 9

1. All reals except $x = \pm 4$
2. $y = 2$
3. $x = -5$
4. $x < -4$ or $x > 1$
5. $x = 3$

Day 46 — Exponential Functions & Growth/Decay

1. 16
2. 3
3. Decay
4. 500
5. 4^{x+2}

Day 47 — Introduction to Logarithms

1. $\log_2 8 = 3$
2. 3
3. 2
4. 0
5. $3^2 = 9$

Day 48 — Properties of Logarithms

1. $\log x + \log y$
2. $\log x - \log y$
3. $3 \log x$
4. $\log(xy/z)$
5. 5

Day 49 — Solving Exponential Equations

1. $x = 4$
2. $x = 2$
3. $x = 1$
4. $x = 3/2$
5. $x = 1$

Day 50 — Mixed Review — Week 10 (Logarithmic Equations)

1. $x = 16$
2. $x = 100$
3. $x = 8$
4. 2
5. $x = 5$

Day 51 — Right Triangle Trig (SOH-CAH-TOA)

1. $3/5$
2. $4/5$
3. $3/4$
4. $3/5$
5. 13

Day 52 — Special Right Triangles & the Unit Circle

1. $\sqrt{2}$
2. $\sqrt{3}$
3. (1, 0)
4. (0, 1)
5. $\sqrt{2}/2$

Day 53 — Radians & Degree Conversion

1. π
2. $\pi/2$
3. 60°
4. $3\pi/2$
5. 30°

Day 54 — Evaluating Trig Functions of Common Angles

1. $1/2$
2. $1/2$
3. 1
4. 1
5. 1

Day 55 — Mixed Review — Week 11

1. $2\pi/3$
2. $\sqrt{3}/2$
3. $15/17$
4. $\sqrt{3}$
5. 1

Day 56 — Comprehensive Review I

1. $(x - 5)(x + 3)$
2. $6x^3y^4$
3. $x = 2, 4$
4. $6\sqrt{2}$
5. 3

Day 57 — Comprehensive Review II

1. $x \geq 1$
2. $x - 2$
3. $x = 6$
4. $(-2, -1)$
5. $f^{-1}(x) = x + 7$

Day 58 — Comprehensive Review III

1. 5
2. $y = 3$
3. $x = 32$
4. $\pi/4$
5. 5

Day 59 — Comprehensive Review IV

1. $2x(x - 1)(x + 1)$
2. $x = 1, -5$
3. $\sqrt{3}/2$
4. $2x^2 - 1$
5. -31 (no real roots)

Day 60 — Pre-Calc Ready! (Final Comprehensive Review)

1. $x = 2, 3$
2. $f^{-1}(x) = (x + 9)/3$
3. $7 - 3i$
4. Vertical: $x = -3$; Horizontal: $y = 1$
5. 150° ; $\sin(150^\circ) = 1/2$