Review for Final Exam Form A

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#4, 6, 9, 13, 28, 34

4. $-2[x+9(x+1)]$

Begin by multiplying out the parentheses that are inside the brackets.

$$-2[x+9x+9]$$

Combine like terms within the brackets.

$$-2[10x+9]$$

Use the distributive property to multiply out the brackets.

$$-20x-18$$

The correct answer is D.

6. $2(3x+5)=5x-11$

Multiply out the parentheses.

$$6x+10=5x-11$$

To get all the x terms on the left side, you must subtract 5x from each side.

$$\begin{array}{rrr} 6x+10 & = & 5x-11 \\ \underline{-5x} & & \underline{-5x} \\ x+10 & = & -11 \end{array}$$

In order to get all the number terms on the right side, subtract 10 from each side.

$$\begin{array}{rrr} x+10 & = & -11 \\ \underline{-10} & & \underline{-10} \\ x & = & -21 \end{array}$$

The correct answer is A.

9. $2x+1<3x+4$

Get the x terms on the left side by subtracting 3x from each side.

$$\begin{array}{r} 2x+1<3x+4 \\ \underline{-3x \quad -3x} \\ -x+1< \quad 4 \end{array}$$

Get the number terms on the right side by subtracting 1 from each side.

$$\begin{array}{r} -x+1< \quad 4 \\ \underline{\quad -1 \quad -1} \\ -x \quad < \quad 3 \end{array}$$

Finally, divide both sides by -1 (don't forget to REVERSE the inequality sign!)

$$\frac{-x}{-1} < \frac{3}{-1}$$

$$x > -3$$

The correct answer is D.

13. **Simplify:** $\dfrac{5x^2y}{x^3}$

The x^2 **divides into the** x^3**, leaving an** x **in the denominator.**

$$\frac{5y}{x}$$

The correct answer is B.

28. **Simplify:** $\dfrac{x^2-4x+3}{1-x}$

Before you begin, remember that you NEVER divide out terms. The first step must be to factor, in this case, the numerator.

$$\frac{(x-3)(x-1)}{1-x}$$

Now, notice that the factor of $(x-1)$ in the numerator and $1-x$ in the denominator are negatives of one another. Therefore, these factors divide out, leaving a factor of (-1):

$$\frac{(x-3)\cancel{(x-1)}^{(-1)}}{\cancel{1-x}}$$

What is left is: $(x-3)(-1)$ or $(-1)(x-3)$ or $-x+3$ or $3-x$.

You do NOT need the denominator.

The correct answer is A.

34. Find the y-intercept: $x+3y=7$.

The y-intercept is ALWAYS the point where the graph crosses the y-axis, and at this point, x=0. So, let x=0, and solve for y.

$$x+3y=7$$

$$0+3y=7$$

$$3y=7$$

$$y=\frac{7}{3}$$

Therefore the correct answer is A $\left(0,\ \frac{7}{3}\right)$

28. Simplify: $\dfrac{x^2-4x+3}{1-x}$

Before you begin, remember that you NEVER divide out terms. The first step must be to factor, in this case, the numerator.

$$\frac{(x-3)(x-1)}{1-x}$$

Now, notice that the factor of $(x-1)$ in the numerator and $1-x$ in the denominator are negatives of one another. Therefore, these factors divide out, leaving a factor of (-1):

$$\frac{(x-3)\cancel{(x-1)}^{(-1)}}{\cancel{1-x}}$$

What is left is: $(x-3)(-1)$ or $(-1)(x-3)$ or $-x+3$ or $3-x$.

You do NOT need the denominator.

The correct answer is A.

Review for Final Exam Form B

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6. $3(5a+1) = 2(a-4)$

Multiply out the parentheses.

$$15a + 3 = 2a - 8$$

To get all the "a" terms on the left side, you must subtract 2a from each side.

$$\begin{array}{r} 15a + 3 = 2a - 8 \\ \underline{-2a \quad\quad -2a} \end{array}$$

$$13a + 3 = \quad -8$$

In order to get all the number terms on the right side, subtract 3 from each side.

$$\begin{array}{r} 13a + 3 = \quad -8 \\ \underline{\quad -3 \quad\quad -3} \end{array}$$

$$13a \quad = \quad -11$$

Finally, divide both sides by 13.

$$\frac{13a}{13} \quad = \quad -\frac{11}{13}$$

$$a \quad = \quad -\frac{11}{13}$$

The correct answer is D.

8. Solve for W: $P = 2L + 2W$

Subtract 2L from each side of the equation to get the W term alone on the right.

$$\begin{array}{rl} P & = 2L + 2W \\ \underline{-2L} & \underline{\quad -2L} \end{array}$$

$$P - 2L = 2W$$

Now, to solve for W, you must undo multiplication by 2. Divide both sides by 2.

$$\frac{P - 2L}{2} = \frac{2W}{2}$$

Don't divide out the 2L, since this is a term. Never divide out terms!!

$$\frac{P - 2L}{2} = \frac{2W}{2}$$

$$\frac{P - 2L}{2} = W$$

The correct answer is A.

31. Simplify: $\dfrac{x-2}{x^2-4}$

Before you begin, remember that you NEVER divide out terms. The first step must be to factor, in this case, the denominator.

$$\frac{x-2}{(x-2)(x+2)}$$

Now divide out the factors of (x-2) in the numerator and denominator:

$$\frac{\cancel{x-2}}{\cancel{(x-2)}(x+2)}$$

Since no factors remain in the numerator, remember that there will always be a factor of 1 left. You MUST write the fraction with a numerator of 1.

$$\frac{1}{(x+2)} \text{ or } \frac{1}{x+2}$$

The correct answer is _____.

32. Simplify: $\dfrac{2x^2+x-15}{4x^2-16x+15}$

As in the previous problem, before you begin, remember that you NEVER divide out terms. The first step must be to factor, in this case, the numerator and denominator. This factoring is harder than the first problem, so you might need to refer to Section 2.06 for additional explanation and examples.

The First times First begins like this:

$$\frac{(2x\quad)(x\quad)}{(2x\quad)(2x\quad)}$$

The Last times Last is probably "3 times 5" or "5 times 3"in both the numerator and denominator. Order will NOT make any difference in the denominator. (Why?) Use trial and error:

$$\frac{(2x \quad 5)(x \quad 3)}{(2x \quad 5)(2x \quad 3)} \text{ or } \frac{(2x \quad 3)(x \quad 5)}{(2x \quad 5)(2x \quad 3)}$$

The middle term in the numerator must subtract to give you "+1x". In the numerator, the signs will be "opposite". In the denominator, both sides are negative!

$$\frac{(2x - 5)(x + 3)}{(2x - 5)(2x - 3)}$$

Now divide out the factors of (2x-5) in the numerator and denominator:

$$\frac{\cancel{(2x - 5)}(x + 3)}{\cancel{(2x - 5)}(2x - 3)}$$

The final answer is: $\frac{(x + 3)}{(2x - 3)}$ **or** $\frac{x + 3}{2x - 3}$.

The correct answer is _____.

39. Find the y intercept: $x + 3y = 7$.

The y intercept is ALWAYS the point where the graph crosses the y axis, and at this point, x=0. So, let x=0, and solve for y.

$$x + 3y = 7$$

$$0 + 3y = 7$$

$$3y = 7$$

$$y = \frac{7}{3}$$

Therefore the correct answer is $\left(0, \frac{7}{3}\right)$

40. Find the graph that matches $y = 3x + 2$

Solution: See the graph on the bottom of page 314!!