

1. Solve for x :

$$x^2 + 5 = 4x$$

2. Find $d(AB)$ where

$A(8, -3)$ and $B(-1, 3)$

3. Find y if $(-3, y)$ is equidistant from $(-3, 2)$ and $(5, 6)$.

4. Factor completely:

$$x^3 - 3x^2 - 9x + 27$$

5. $3x - 5y = 30$

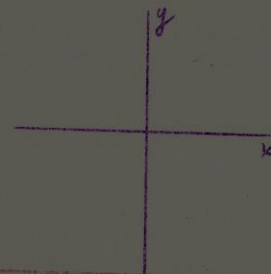
a) x intercept _____

b) y intercept _____

c) slope _____

d) Is it a function? _____

e) Graph it.



6. $y = -x^2 + 7x - 12$

a) Type _____

b) x intercepts _____

c) y intercepts _____

d) Opens _____

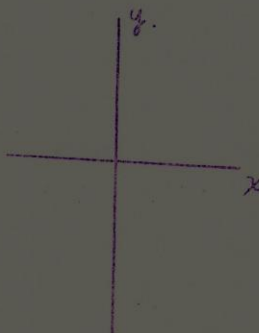
e) Is it a function? _____

f) Domain _____

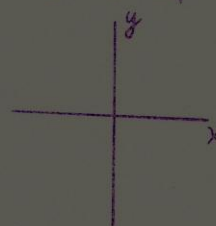
g) Range _____

h) Vertex _____

i) Graph it.



7a) Graph $y = |x - 2|$



A) Vertex _____

c) Domain _____

d) Range _____

e) Is it a function? _____

8. Write the equation of a circle with center at $(2, -4)$ which passes through $(7, 2)$.

9. a) Express in standard form: $9x^2 + 4y^2 + 18x - 16y - 11 = 0$.

A Identify type: _____

c) Graph.

10. Factor by completing the square method.

$$x^4 + x^2 + 25$$

11. The sum of the areas of two squares is 269 sq. in. If the sides of one square are 3 more than the sides of the other square, find the length of the sides of each.

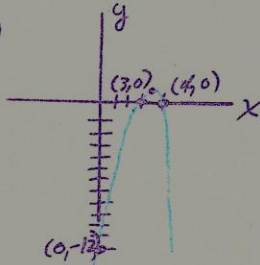
Math 133 Exam 1D Solutions.

1. $x^2 - 4x + 5 = 0$
 $x = \frac{4 \pm \sqrt{16 - 20}}{2}$
 $= \frac{4 \pm 2i}{2} = 2 \pm i$

4. $x^3 - 3x^2 - 9x + 27$
 $x^2(x-3) - 9(x-3)$
 $(x^2-9)(x-3)$
 $(x-3)^2(x+3)$

(See #9 1/6, 25, NEW, comiso)

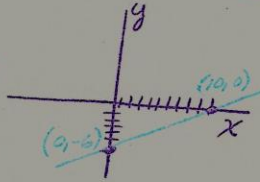
6. $y = -(x^2 - 7x + 12)$
 $= -(x-3)(x-4)$
 a) Parabola
 f) x int: $x=3, x=4$
 c) y int: $y=-12$
 d) Opens down.
 e) Function yes.
 f) D: all real x
 g) R: all $y \leq \frac{1}{4}$
 h) Vertex $(\frac{7}{2}, \frac{1}{4})$
 i)



2. $d(AB) = \sqrt{9^2 + 6^2}$
 $= \sqrt{81 + 36}$
 $= \sqrt{117} = \sqrt{9 \cdot 13}$
 $= 3\sqrt{13}$

5. (See #2 on practice exam.)

- $3x - 5y = 30$
 a) x int: $x=10$
 b) y int: $y=-6$
 c) Slope $\frac{3}{5}$
 d) Function yes.



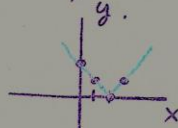
Let $A=(-3,9)$; $B=(-3,2)$; $C=(5,6)$

3. $d(AB) = y-2$
 $d(AC) = \sqrt{8^2 + (y-6)^2}$
 Since $d(AB) = d(AC)$
 $(y-2)^2 = 8^2 + (y-6)^2$
 $y^2 - 4y + 4 = 64 + y^2 - 12y + 36$
 $y = 12$

7. (See p. 28, #35)

$y = 1x - 2$

x	y
2	0
1	1
0	2
3	1



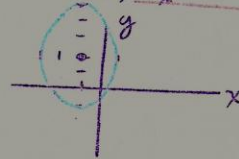
- a) Vertex $(2,0)$
 c) D: all real x
 d) R: $y \geq 0$
 e) Function yes.

(See #15, function's domain)

10. $x^4 + x^2 + 25$
 $+9x^2 - 9x^2$
 $x^4 + 10x^2 + 25 - 9x^2$
 $(x^2+5)^2 - (3x)^2$
 $(x^2+5-3x)(x^2+5+3x)$

8. Use distance formula to find radius. $r = \sqrt{41}$.
 Eg. $(x-2)^2 + (y+4)^2 = 41$

9. $9x^2 + 4y^2 + 18x - 16y - 11 = 0$
 $9x^2 + 18x + 4y^2 - 16y = 11$
 $9(x^2 + 2x + 1) + 4(y^2 - 4y + 4) = 11 + 9 + 16$
 $9(x+1)^2 + 4(y-2)^2 = 36$
 $\frac{(x+1)^2}{4} + \frac{(y-2)^2}{9} = 1$
 Center $(-1, 2)$; $r_x = 2$ $r_y = 3$



11. (See #10 on practice exam.)

Let x = side of smaller square.
 $x+3$ = side of larger.

$(x+3)^2 + x^2 = 269$
 $2x^2 + 6x + 9 = 269$

$2x^2 + 6x - 260 = 0$
 $x^2 + 3x - 130 = 0$
 $(x+13)(x-10) = 0$
 $x = -13$ or $x = 10$ and $x+3 = 13$
 (Reject)