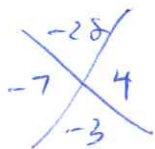


Quadratic Practice

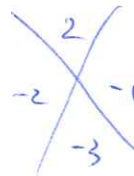
Factor each completely.

1) $a^2 - 3a - 28$



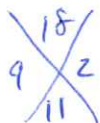
$(a+4)(a-7)$

2) $x^2 - 3x + 2$



$(x-1)(x-2)$

3) $9x^2 + 11x + 2$



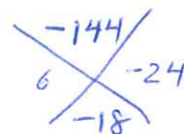
$9x^2 + 9x + 2x + 2$

$9x(x+1) + 2(x+1)$

$(x+1)(9x+2)$

$(9x+2)(x+1)$

4) $9x^2 - 18x - 16$



$(3x+2)(3x-8)$

$9x^2 + 6x - 24x - 16$

$3x(3x+2) - 8(3x+2)$

$(3x+2)(3x-8)$

5) $16n^2 - 36 = 4(4n^2 - 9)$

$= 4(2n+3)(2n-3)$

6) $9b^2 - 25$

$(3b+5)(3b-5)$

7) $m^2 + 14m + 49$

$(m+7)^2$

8) $9a^2 - 24a + 16$

$(3a-4)^2$

Diff. of Squares

Perfect Squares

Solve each equation by factoring.

9) $k^2 - 16 = -6k$

$$k^2 + 6k - 16 = 0$$

$$(k-2)(k+8) = 0$$

$$k = 2 \quad k = -8$$

10) $n^2 = 10n - 16$

$$n^2 - 10n + 16 = 0$$

$$(n-2)(n-8) = 0$$

$$n = 2 \quad n = 8$$

Solve each equation by completing the square.

11) $x^2 + 6x - 21 = -5$

$$x^2 + 6x - 16 = 0$$

$$(x^2 + 6x + 9) = 16 + 9$$

$$(x+3)^2 = 25$$

$$x+3 = \pm 5$$

$$x = -3 \pm 5$$

$$x = 2 \text{ or } -8$$

12) $n^2 - 4n - 4 = 6$

$$n^2 - 4n - 10 = 0$$

$$n^2 - 4n + 4 = 10 + 4$$

$$(n-2)^2 = 14$$

$$n-2 = \pm \sqrt{14}$$

$$n = 2 \pm \sqrt{14}$$

Solve each equation by taking square roots.

13) $3b^2 - 2 = 298$

$$3b^2 = 300$$

$$b^2 = 100$$

$$b = \pm 10$$

14) $8(n-5)^2 + 3 = 35$

$$8(n-5)^2 = 32$$

$$(n-5)^2 = 4$$

$$n-5 = \pm 2$$

$$n = 5 \pm 2$$

$$n = 7 \text{ or } 3$$

Solve each equation with the quadratic formula.

15) $4x^2 - 7x = 92$

$$4x^2 - 7x - 92 = 0$$

$$a=4 \quad b=-7 \quad c=-92$$

16) $x^2 = 1 - 9x$

$$x^2 + 9x - 1 = 0$$

$$a=1 \quad b=9 \quad c=-1$$

$$\frac{23}{4} \text{ or } -4$$

$$\frac{-9 \pm \sqrt{85}}{2}$$

$$\frac{-9 \pm \sqrt{9^2 - 4(1)(-1)}}{2(1)}$$

$$\frac{-9 \pm \sqrt{81 + 4}}{2}$$

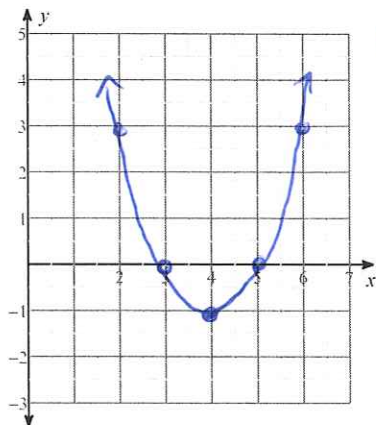
$$\frac{-9 \pm \sqrt{85}}{2}$$

$$\frac{7 \pm \sqrt{(-7)^2 - 4(4)(-92)}}{2(4)} = \frac{7 \pm \sqrt{49 + 1472}}{8} = \frac{7 \pm \sqrt{1521}}{8}$$

$$= \frac{7 \pm 39}{8}$$

Sketch the graph of each function.

17) $y = x^2 - 8x + 15 = (x-5)(x-3)$

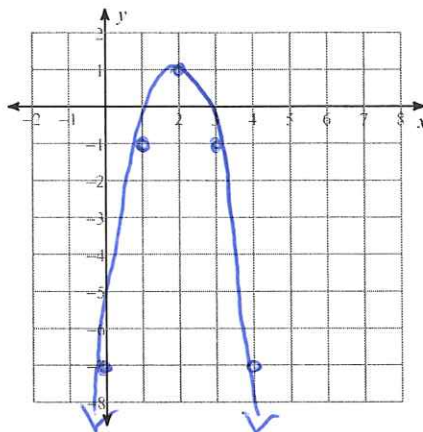


$x=5 \quad x=3$
 $\frac{5+3}{2} = \frac{8}{2} = 4$
 $(4-5)(4-3)$
 $-1 \cdot 1 = -1$

x	y
2	3
3	0
4	-1
5	0
6	3

18) $y = -2(x-2)^2 + 1$

vortex (2,1)

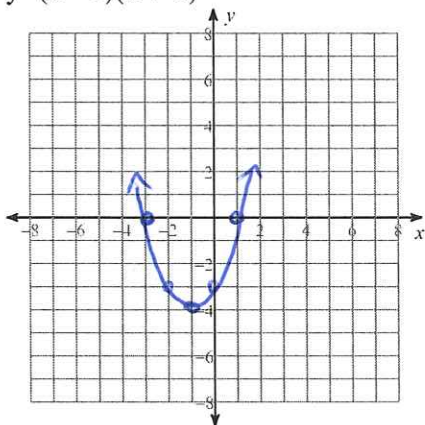


x	y
0	-7
1	-1
2	1
3	-1
4	-7

Sketch the graph of each function.

Identify the Domain, Range, Intervals of Increase, Intervals of Decrease, Positive Intervals, Negative Intervals

19) $y = (x-1)(x+3)$



$x=1 \quad x=-3$

$\frac{1+(-3)}{2} = \frac{-2}{2} = -1$

$(-1-1)(-1+3)$
 $-2 \cdot 2 = -4$

x	y
-3	0
-2	-3
-1	-4
0	-3
1	0

Domain: $(-\infty, \infty)$

Range: $[-4, \infty)$

Increase: $(-1, \infty)$

Decrease: $(-\infty, -1)$

Positive: $(-\infty, -3)(1, \infty)$

Negative: $(-3, 1)$