

## 5.4 Practice Problems

Directions: Factor each completely.

1)  $v^2 - 12v + 36$

$$(v - 6)^2$$

2)  $16r^2 - 40r + 25$

$$(4r - 5)^2$$

3)  $-36x^2 + 49$

$$-(36x^2 - 49)$$
$$-(6x - 7)(6x + 7)$$

4)  $6v^2 + 90v + 300$

$$6(v^2 + 15v + 50)$$

$$6(v + 5)(v + 10)$$

5)  $5x^2 - 20$

$$5(x^2 - 4)$$

$$5(x - 2)(x + 2)$$

6)  $75x^3 - 30x^2 + 3x$

$$3x(25x^2 - 10x + 1)$$

$$3x(5x + 1)^2$$

7)  $2r^2 - 4r + 2$

$$2(r^2 - 2r + 1)$$

$$2(r - 1)^2$$

8)  $18x^2 - 38x - 48$

$$2(9x^2 - 19x - 24) \quad \begin{matrix} x-24 \\ +49 \end{matrix}$$

$$2(9x + 8)(9x - 27)$$

$$2(9x + 8)(x - 3)$$

$$2(9x + 8)(x - 3)$$

9)  $-9x^3 + 16x$

$$-x(9x^2 - 16)$$

$$-x(3x - 4)(3x + 4)$$

Directions: Solve each equation. Sketch it.

10)  $4v^2 = 1$

$$\begin{matrix} -1 & -1 \end{matrix}$$

$$4v^2 - 1 = 0$$

$$(2v - 1)(2v + 1) = 0$$

$$2v - 1 = 0 \quad \text{OR} \quad 2v + 1 = 0$$

$$2v = 1$$

$$v = \frac{1}{2}$$

$$2v = -1$$

$$v = -\frac{1}{2}$$



11)  $25b^2 = -10b - 1$

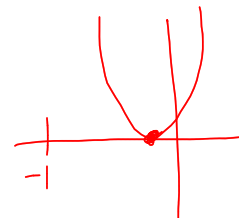
$$25b^2 + 10b + 1 = 0$$

$$(5b + 1)^2 = 0$$

$$5b + 1 = 0$$

$$5b = -1$$

$$b = -\frac{1}{5}$$

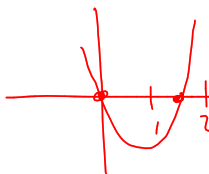


12)  $12v^2 - 18v = 0$

$6v(2v-3) = 0$

$$6v = 0 \quad \text{OR} \quad 2v - 3 = 0$$

$$\boxed{v = 0} \quad \text{OR} \quad \boxed{v = \frac{3}{2}}$$



13)  $245x^2 + 45 = -210x$

$$245x^2 + 210x + 45 = 0$$

$$5(49x^2 + 42x + 9) = 0$$

$5(7x+3)^2 = 0$

$7x + 3 = 0$

$7x = -3$

$\boxed{x = -3/7}$



Directions: Find the zeroes of the function, then sketch the quadratic.

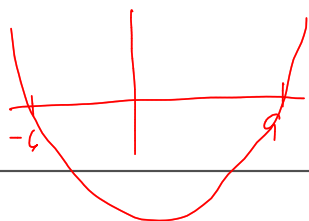
14)  $f(x) = 5x^2 - 15x - 270$

$0 = 5(x^2 - 3x - 54)$

$0 = 5(x-9)(x+6)$

$x-9=0 \quad \text{OR} \quad x+6=0$

$\boxed{x=9 \quad \text{OR} \quad x=-6}$



15)  $h(x) = 50x^2 + 80x + 32$

$0 = 2(25x^2 + 40x + 16)$

$0 = 2(5x+4)^2$

$5x+4=0$

$5x = -4$

$\boxed{x = -4/5}$



16)  $g(x) = 5x^2 - 45$

$0 = 5(x^2 - 9)$

$= 5(x-3)(x+3)$

$x-3=0 \quad \text{OR} \quad x+3=0$

$\boxed{x=3 \quad \text{OR} \quad x=-3}$

