

5.4 Practice Problems

Directions: Factor each completely.

1)  $2v^2 - 24v + 72$   $\times 36$   
 $2(v^2 - 12v + 36)$   $+ -12$   
 $2(v-6)(v-6)$   
 $2(v-6)^2$

2)  $12r^2 - 26r - 56$   $\times -168$   
 $2(6r^2 - 13r - 28)$   $+ -7$   
 $2(6r-21)(6r+8)$   
 $2(2r-7)(3r+4)$

3)  $-36x^2 + 49$   
 $-(36x^2 - 49)$   
 $-(6x-7)(6x+7)$

4)  $6v^2 - 54v - 60$   $\times -10$   
 $6(v^2 - 9v - 10)$   $+ -9$   
 $6(v-10)(v+1)$

5)  $5x^3 - 20x$   
 $5x(x^2 - 4)$   
 $5x(x-2)(x+2)$

6)  $5x^3 + 40x^2 + 75x$   $\times 15$   
 $5x(x^2 + 8x + 15)$   $+ 8$   
 $5x(x+5)(x+3)$


7)  $12r^2 + 38r - 14$   $\times -42$   
 $2(6r^2 + 19r - 7)$   $+ 19$   
 $2(6r+7)(6r-2)$   
 $2(2r+7)(3r-1)$

8)  $169x^2 - 225$   
 $(13x-15)(13x+15)$

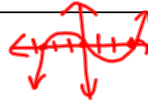
9)  $-9x^3 + 16x$   
 $-x(9x^2 - 16)$   
 $-x(3x-4)(3x+4)$

Directions: Solve each equation by factoring. Sketch it.

10)  $4v^2 = 1$   
 $\frac{-1 \quad -1}{4v^2 - 1 = 0}$   
 $(2v-1)(2v+1) = 0$   
 $2v-1=0$  or  $2v+1=0$   
 $2v=1$  or  $2v=-1$   
 $v = \frac{1}{2}$  or  $v = -\frac{1}{2}$



11)  $23x^3 - 8x^2 - 113x = 7x^3 + 7x$   
 $-7x^3 \quad -7x \quad 7x^3 \quad -7x$   
 $16x^3 - 8x^2 - 120x = 0$   $\times -30$   
 $8x(2x^2 - x - 15) = 0$   $+ -1$   
 $8x(2x-6)(2x+5) = 0$   
 $8x(x-3)(2x+5) = 0$   
 $8x=0$  or  $x-3=0$  or  $2x+5=0$   
 $x=0$  or  $x=3$  or  $2x=-5$   
 $x = -\frac{5}{2}$



$$12) 50v^3 - 18v = 0$$

$$2v(25v^2 - 9) = 0$$

$$2v(5v-3)(5v+3) = 0$$

$$2v = 0$$

$$5v-3 = 0$$

$$5v = 3$$

$$v = 3/5$$

$$5v+3 = 0$$

$$5v = -3$$

$$v = -3/5$$



$$13) 6b^2 + 73 = -48b + 1$$

$$6b^2 + 48b + 72 = 0$$

$$6(b^2 + 8b + 12) = 0$$

$$6(b+6)(b+2) = 0$$

$$b+6 = 0$$

$$b = -6$$

$$b+2 = 0$$

$$b = -2$$



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

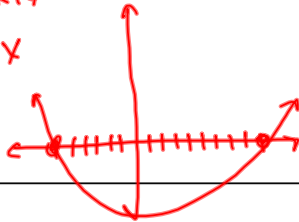
$$14) f(x) = 5x^2 - 15x - 270$$

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

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

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

$$9 = x \text{ or } -6 = x$$



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

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

$$0 = 5(x-3)(x+3)$$

$$x-3 = 0$$

$$x = 3$$

$$\text{or } x+3 = 0$$

$$x = -3$$

