

Math 20-2

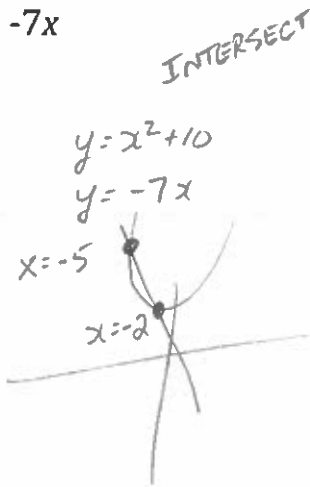
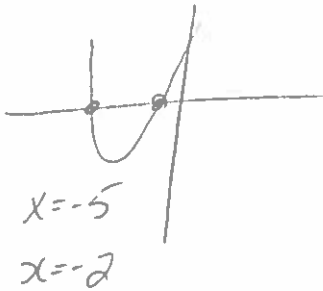
Show all your work for full marks.

Key.

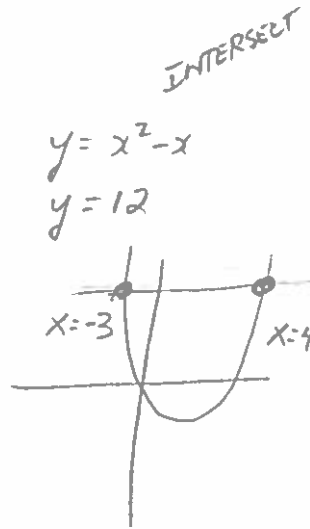
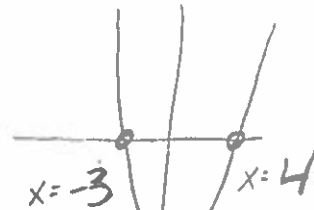
1. Solve by Graphing.

- Three of them need to be solved by Method 1 (both sides go into your calculator)
- Three need to be solve by Method 2 (everything to one side so that one side equals zero).
- Include a sketch for each question.

ZERO
 $x^2 + 7x + 10 = 0$

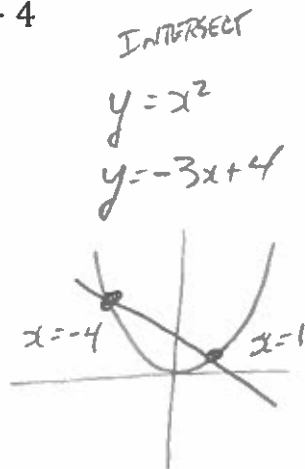
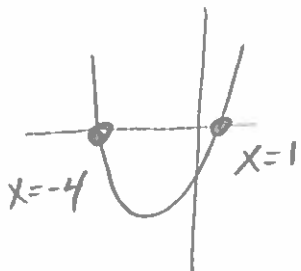


ZERO
 $x^2 - x - 12 = 0$



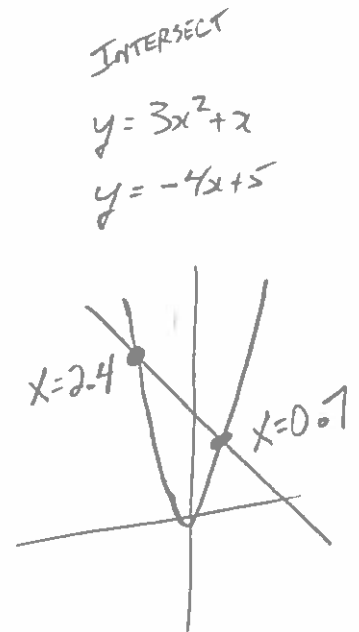
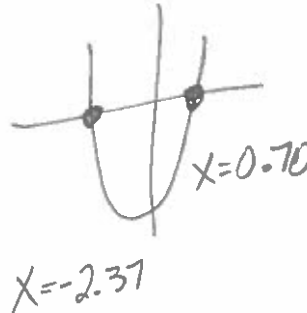
$x^2 = -3x + 4$

ZERO
 $x^2 + 3x - 4 = 0$



$3x^2 + x = -4x + 5$

ZERO
 $3x^2 + 5x - 5 = 0$

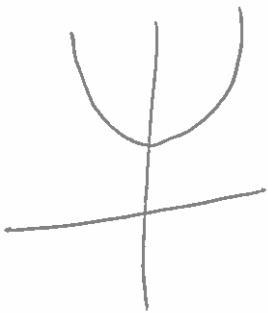


"ZERO"

e. $5x^2 - 2x - 1 = -x - 7$ INTERSECT

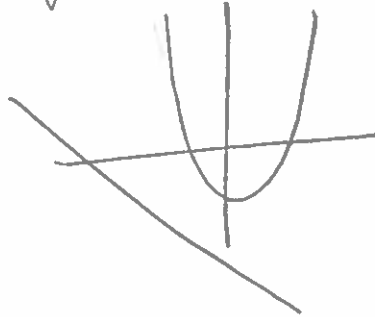
$5x^2 - x + 6 = 0$

$y = 5x^2 - 2x - 1$
 $y = -x - 7$



No zeros

No solution.

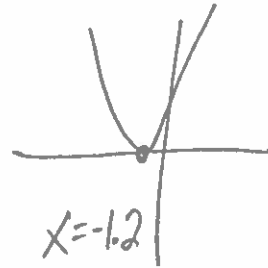


No solution

f. $13x^2 + 35x + 21 = -12x^2 - 25x - 15$

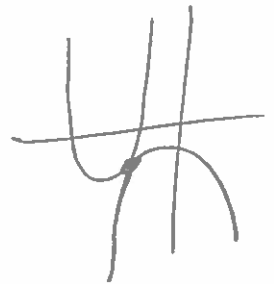
"ZERO" $25x^2 + 60x + 36 = 0$

INTERSECT



$x = -1.2$

$y = 13x^2 + 35x + 21$
 $y = -12x^2 - 25x - 15$



$x = -1.2$

2. Solve by Factoring or Quad Formula.

a. $4x^2 + 15x + 9 = 0$

$4x^2 + 12x + 3x + 9 = 0$

$4x(x+3) + 3(x+3) = 0$

$(4x+3)(x+3) = 0$

$4x+3=0$ $x+3=0$

$x = -3/4$ $x = -3$

c. $x^2 - 49 = 0$

$(x+7)(x-7) = 0$

$x+7=0$ $x-7=0$

$x = -7$ $x = 7$

b. $2y^2 + 4y - 30 = 0$

$2(y^2 + 2y - 15) = 0$

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

$y+5=0$ $y-3=0$
 $y = -5$ $y = 3$

d. $6x^2 + 13x - 5 = 0$

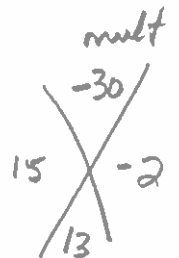
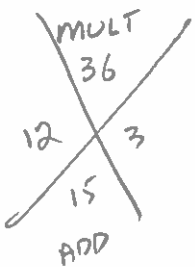
$6x^2 + 15x - 2x - 5 = 0$

$3x(2x+5) - 1(2x+5) = 0$

$(2x+5)(3x-1) = 0$

$2x+5=0$ $3x-1=0$

$x = -5/2$ $x = 1/3$



$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

3. Solve with the quadratic formula – exact answers for two and round to two decimal places (hundredths) for two.

a. $3x^2 + 6x + 1 = 0$

$a=3$
 $b=6$
 $c=1$

$$x = \frac{-6 \pm \sqrt{36 - 4(3)(1)}}{2(3)}$$

$$x = \frac{-6 \pm \sqrt{24}}{6}$$

$$\frac{\sqrt{4}\sqrt{6}}{2\sqrt{6}}$$

$$x = \frac{-6 \pm 2\sqrt{6}}{6}$$

$$x = \frac{-3 \pm \sqrt{6}}{3}$$

$x = -0.18$ $x = -1.82$

c. $x^2 - 50 = 0$

$a=1$
 $b=0$
 $c=-50$

$$x = \frac{0 \pm \sqrt{0 - 4(1)(-50)}}{2(1)}$$

$$x = \frac{\pm \sqrt{200}}{2}$$

$$\frac{\sqrt{100}\sqrt{2}}{10\sqrt{2}}$$

$$x = \frac{\pm 10\sqrt{2}}{2}$$

$$x = \pm 5\sqrt{2}$$

$x = 7.07$ $x = -7.07$

b. $2x^2 + 4x - 3 = 0$

$a=2$
 $b=4$
 $c=-3$

$$x = \frac{-4 \pm \sqrt{16 - 4(2)(-3)}}{2(2)}$$

$$x = \frac{-4 \pm \sqrt{40}}{4}$$

$$\frac{\sqrt{4}\sqrt{10}}{2\sqrt{10}}$$

$$x = \frac{-4 \pm 2\sqrt{10}}{4}$$

$$x = \frac{-2 \pm \sqrt{10}}{2}$$

$x = 0.58$ $x = -2.58$

d. $x^2 - 2x - 5 = 0$

$a=1$
 $b=-2$
 $c=-5$

$$x = \frac{2 \pm \sqrt{4 - 4(1)(-5)}}{2(1)}$$

$$x = \frac{2 \pm \sqrt{24}}{2}$$

$$x = \frac{2 \pm 2\sqrt{6}}{2}$$

$$x = 1 \pm \sqrt{6}$$

$x = 3.45$ $x = -1.45$

4. The graph of a quadratic function has x-intercepts -10 and 2 . Write a quadratic equation that has these roots. The 'a' value is 1.

$$\begin{aligned} y &= a(x-r)(x-s) & x &= -10 & x &= 2 \\ y &= a(x+10)(x-2) & \underline{x+10=0} & & \underline{x-2=0} \\ a &= 1 & \text{factor} & & \text{factor} \\ y &= 1(x+10)(x-2) \end{aligned}$$

5. The graph of a quadratic function has x-intercepts $\frac{1}{5}$ and -2 . Write a quadratic equation that has these roots. The 'a' value is 1.

$$\begin{aligned} & & x &= \frac{1}{5} & x &= -2 \\ & & 5x &= 1 & x+2 &= 0 \\ & & \underline{5x-1=0} & & \underline{\hspace{2cm}} & \\ a &= 1 & \text{factor} & & \text{factor} & \\ y &= 1(5x-1)(x+2) \end{aligned}$$