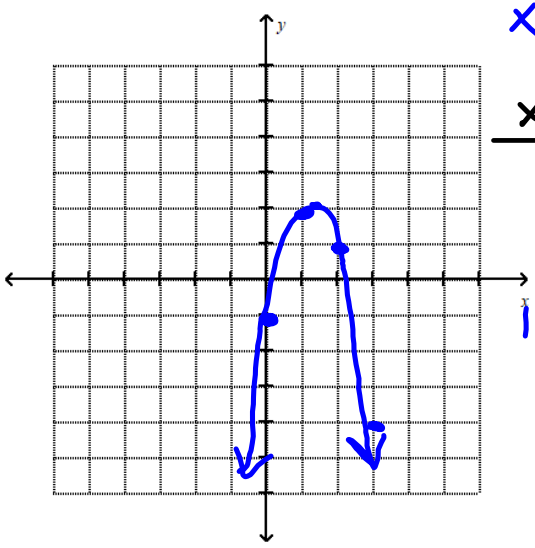
TEST REVIEW 5.1-5.2

$a=-2\ b=5\ c=1$ $x=\frac{-b}{2a}$

1. Graph the function $f(x) = -2x^2 + 5x - 1$.
Your work must include finding the axis of symmetry, the vertex, and making a table of values.

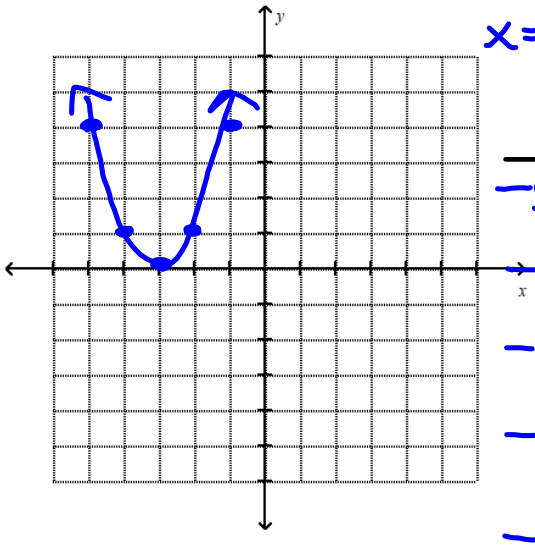


$x=\frac{-5}{2(-2)}=\frac{-5}{-4}=\frac{5}{4}$ or 1.25

x		y
0	$-2(0)^2+5(0)-1$	-1
1	$-2(1)^2+5(1)-1$	2
1.25	$-2(1.25)^2+5(1.25)-1$	2.125
2	$-2(2)^2+5(2)-1$	1
3	$-2(3)^2+5(3)-1$	-4

$a=1 \quad b=6 \quad c=9$ $\quad x=\frac{-b}{2a}$

2. Graph the function $f(x)=x^2+6x+9$.
Your work must include finding the axis of symmetry, the vertex, and making a table of values.



$x=\frac{-6}{2(1)} \rightarrow x=\frac{-6}{2} \rightarrow$ a.o.s. $x=-3$ $\quad (-3,0)$

x		y
−5	$(-5)^2+6(-5)+9$	4
−4	$(-4)^2+6(-4)+9$	1
−3	$(-3)^2+6(-3)+9$	0
−2	$(-2)^2+6(-2)+9$	1
−1	$(-1)^2+6(-1)+9$	4

3. Factor each of the following:

a) $x^2+2x-80$

sum 2 | product −80

$-1\cdot 80$	$1\cdot -80$
$-2\cdot 40$	$2\cdot -40$
$-4\cdot 20$	$4\cdot -20$
$-5\cdot 16$	$5\cdot -16$
$-8\cdot 10$	$8\cdot -10$

$-8+10$

$\frac{-8}{1} \quad \frac{10}{1}$

$(x-8)(x+10)$

b) $2x^2+7x+3$

sum 7 | product 6

$1\cdot 6$	$-1\cdot -6$
$2\cdot 3$	$-2\cdot -3$

$1+6$

$\frac{1}{2} \quad \frac{6\div 2}{2\div 2}=\frac{3}{1}$

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

c) $14x^2-8x-6$

$2(7x^2-4x-3)$

Sum −4 | product −21

$1\cdot -21$	
$-1\cdot 21$	
$3\cdot -7$	
$-3\cdot 7$	

$3+-7$

$\frac{3}{7} \quad \frac{-7\div 7}{7\div 7}=\frac{-1}{1}$

$2(7x+3)(x-1)$

3. Factor each of the following:

d) $\sqrt{4x^2} - \sqrt{49}$

$(2x-7)(2x+7)$

e) $9x^2 + 24x + 4$

sum 24 | product 36

$1 \cdot 36$ $-1 \cdot -36$
$2 \cdot 18$ $-2 \cdot -18$
$3 \cdot 12$ $-3 \cdot -12$
$4 \cdot 9$ $-4 \cdot -9$
$6 \cdot 6$ $-6 \cdot -6$

prime

f) $27x^2 - 3$

$3(9x^2 - 1)$

$3(3x+1)(3x-1)$

4. Solve each of the following:

a) $x^2 - 3x - 40 = 0$

sum -3 | product -40

$-1 \cdot 40$ $1 \cdot -40$
$-2 \cdot 20$ $2 \cdot -20$
$-4 \cdot 10$ $4 \cdot -10$
$-5 \cdot 8$ $5 \cdot -8$

$5 + -8$

$\frac{5}{1}$ $\frac{-8}{1}$

$(x+5)(x-8)=0$

$x+5=0$ $x-8=0$
$-5\ -5$ $+8\ +8$
$x=-5$ $x=8$

b) $5x^2 - 13x = -6$

$+6 \quad +6$

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

sum -13 | product 30

$\frac{-10}{5}$ $\frac{-3}{5}$

$\frac{-2}{1}$ $\frac{-3}{5}$

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

$x-2=0$ $5x-3=0$
$+2\ +2$ $+3\ +3$
$x=2$ $\frac{5x}{5} = \frac{3}{5}$

$x = \frac{3}{5}$

c) $\sqrt{x^2} - \sqrt{100} = 0$

$(x+10)(x-10)=0$

$x+10=0$ $x-10=0$
$-10\ -10$ $+10\ +10$
$x=-10$ $x=10$

4. Solve each of the following:

d) $3x^2 - 4x - 8 = x$

$-x \quad -x$

$3x^2 - 5x - 8 = 0$

sum -5 product -24

$-8 \quad 3 \quad 1$

$3 \quad 3 \quad 1$

$(3x-8)(x+1) = 0$

$3x - 8 = 0$ $\quad +8 \quad +8$

$\frac{3x}{3} = \frac{8}{3}$

$x = \frac{8}{3}$

$x + 1 = 0$ $\quad -1 \quad -1$

$x = -1$

e) $81x^2 - 16 = 0$

$(9x+4)(9x-4) = 0$

$9x + 4 = 0$ $\quad -4 \quad -4$

$\frac{9x}{9} = \frac{-4}{9}$

$x = -\frac{4}{9}$

$9x - 4 = 0$ $\quad +4 \quad +4$

$\frac{9x}{9} = \frac{4}{9}$

$x = \frac{4}{9}$

f) $30x^2 - 6x = 0$

GCF = 6x

$6x(5x - 1) = 0$

$\frac{6x}{6} = \frac{0}{6}$

$x = 0$

$5x - 1 = 0$ $\quad +1 \quad +1$

$\frac{5x}{5} = \frac{1}{5}$

$x = \frac{1}{5}$