

1. Find the root(s) of  $y = 3x^2 - 7x + 2$

$$3x^2 - 7x + 2 = 0$$

$$a=3 \quad b=-7 \quad c=2$$

$$\begin{array}{r} ac=6 \\ \hline -1 \quad 6 \\ 2 \quad 3 \end{array}$$

$$(3x^2 - x - 6x + 2) = 0$$

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

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

$$(2, 0) \text{ and } (\frac{1}{3}, 0)$$

$$\begin{array}{r} x-2=0 \\ +2 \quad +2 \\ \hline x=2 \end{array}$$

$$\begin{array}{r} 3x-1=0 \\ +1 \quad +1 \\ \hline 3x=1 \end{array}$$

2. Find the vertex of  $y = 2x^2 + 5x - 6$

$$x = \frac{-b}{2a} = \frac{-5}{2(2)}$$

$$x = -1.25$$

$$y = 2(-1.25)^2 + 5(-1.25) - 6$$

$$y = -9.125$$

$$(-1.25, -9.125)$$

$$\begin{array}{r} 3x=1 \\ \hline x=\frac{1}{3} \end{array}$$

3. Write the equation of the line in slope intercept form that passes through  $(4, -7)$ , and  $(-2, 5)$ .

## Products of Consecutive Numbers

1. The product of two negative, consecutive integers is 56. Find the integers.

$$n = 1^{\text{st}} \text{ int.}$$

$$n+1 = 2^{\text{nd}} \text{ int.}$$

$$a=1 \quad b=1 \quad c=-56$$

$$ac = -56$$

1	56
-2	-28
-4	-14
-7	-8

$$n(n+1) = 56$$

$$n^2 + n = 56$$

$$n^2 + n - 56 = 0$$

$$(n-7)(n+8) = 0$$

~~$$n-7=0$$~~

~~$$n=7$$~~

$$n+8=0$$

$$n = -8$$

$$n+1 = -7$$

2. The product of two negative consecutive odd integers is 99. Find the integers.

$$n = 1^{\text{st}} \#$$

$$n+2 = 2^{\text{nd}} \#$$

$$(n)(n+2) = 99$$

$$\begin{array}{r} n^2 + 2n = 99 \\ -99 \quad -99 \\ \hline \end{array}$$

$$n^2 + 2n - 99 = 0$$

$$(n+11)(n-9) = 0$$

$$\begin{array}{r} n+11=0 \\ -11 \quad -11 \\ \hline \end{array}$$

$$\begin{array}{l} n = -11 \\ n+2 = -9 \end{array}$$

~~$$\begin{array}{r} n-9=0 \\ +9 \quad +9 \\ \hline n=9 \end{array}$$~~

$n, n+2$

3. Find **two** consecutive **odd** integers such that the **square** of the **smaller** **is** **10** more than the **larger**.

$$\begin{array}{r} + \\ n = 1^{\text{st}} \# \\ n+2 = 2^{\text{nd}} \# \end{array} \quad \begin{array}{r} n^2 \\ n^2 = 10 + n + 2 \\ n^2 = n + 12 \\ -n - 12 \quad -n - 12 \\ \hline \end{array}$$

$$\begin{aligned} n^2 - n - 12 &= 0 \\ (n-4)(n+3) &= 0 \end{aligned}$$

~~$$\begin{aligned} n-4 &= 0 & n+3 &= 0 \\ n &= 4 & -3 & -3 \end{aligned}$$~~

$n = -3$   
 $n+2 = -1$

You Try:

1. The product of two negative consecutive integers is 42. Find the integers.

2. The product of two positive consecutive odd integers is 195. Find the integers.

3. The product of two positive consecutive even integers is 6 more than three times their sum. Find the integers.

$$n = 1^{\text{st}} \#$$

$$n+2 = 2^{\text{nd}} \#$$

$$n = 6$$

$$n+2 = 8$$

$$n(n+2) = 6 + 3(n+n+2)$$

$$n^2 + 2n = 6 + 3(2n+2)$$

$$n^2 + 2n = 6 + 6n + 6$$

$$n^2 + 2n = 6n + 12$$

$$\begin{array}{r} -6n - 12 \\ \hline n^2 - 4n - 12 = 0 \end{array}$$

$$(n-6)(n+2) = 0$$

$$n-6=0 \quad n+2=0$$

$$n=6 \quad n=-2$$