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page 445-6 14-33 all, 61-70

Date: 4/21<http://www.mathvizza.com>Bell WorkDirections: Please find the roots by factoring.

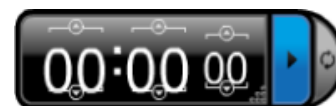
$$y = x^2 + 6x + 5$$

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

$$0 = (x+5)(x+1)$$

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

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



## Objectives

1. The students will write products as polynomials in standard form.
2. The students will investigate zeros of polynomial functions.

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Write each product as a polynomial in standard form.

$$14. 3x^2(4x^3 - 2x^2 + 5x + 2)$$

$$12x^5 - 6x^4 + 15x^3 + 6x^2$$

$$\text{MU. } (x-1)^2(2x+5)$$

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

$$\begin{array}{r} 2x^3 + 5x^2 - 4x^2 - 10x + 2x + 5 \\ 2x^3 + x^2 - 8x + 5 \end{array}$$

$$\text{MU. } f(x) = \frac{2}{15}x(x-3)(x+5)$$

$$\frac{2}{15}x(x^2 + 2x - 15)$$

$$\frac{2}{15}x^3 + \frac{4}{15}x^2 -$$

$$17. (x+7)(5x-3)$$

$$5x^2 - 3x + 35x - 21$$

$$5x^2 + 32x - 21$$

$$\text{MU. } (5x+3)^3$$

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

$$(5x+3)(25x^2 + 30x + 9)$$

$$\begin{array}{r} 125x^3 + 150x^2 + 45x + 75x^2 \\ + 90x + 27 \\ \hline 125x^3 + 225x^2 + 135x + 27 \end{array}$$

Is the given number a zero?

If  $(x-a)$  is a factor of a polynomial function, then  $f(a)=0$ .

If  $f(a)=0$  then  $x-a$  is a factor of the polynomial function.

Sketchpad Demo

You need to answer questions like

Is  $(x+2)$  a factor of  $x^2-x-6$ ?  $f(-2) = (-2)^2 - (-2) - 6$   
 $= 4 + 2 - 6$   
 $= 6 - 6 = 0 \therefore x+2$

Is  $(x-4)$  a factor of  $f(x) = -4x^4 - 28x^3 - 64x^2 - 48$ ?

NOT

$$f(4) = -4(4)^4 - 28(4)^3 - 64(4)^2 - 48$$

$$= -4(256) - 28(64) - 64(16) - 48$$

is a factor  
of  $x^2-x-6$

Is  $(x+7)$  a factor of  $g(x) = 2x^4 + 8x^3 - 38x^2 + 28x$ ?

$$-1024 - 1792 - 1024 - 48$$

$$= -3880$$

Is  $x+1$  a factor of  $f(x) = 3x^4 + 2x^3 - x^2 + 4x + 4$ ?

$$f(-1) = 0$$