Quiz 5.7

Factor:

3 points

1. $y^6 + 6y^3 - 16$ $y^2 + 6y - 16$

$(y^3 + 8)(y^3 - 2)$ $(\quad)(\quad)$

$(y+2)(y^2 - 2y + 4)(y^3 - 2)$

4 points

2. $2x^4 y + 10x^3 y - 18x^2 y - 90xy$

$2xy(x^3 + 5x^2 - 9x - 45)$

$x^2(x+5) - 9(x+5)$

$2xy(x+5)(x^2 - 9)$

$2xy(x+5)(x+3)(x-3)$

$z + x - y = 0$ $2x + 3x + 3$

$z = -x + y$ $5x + 3$

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5.8 Polynomial Equations

The Zero-Product Property

if $ab = 0$, then $a = 0$ or $b = 0$ or both a and b are 0.

$$2x = 0$$

$x = 0$

Solve

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

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

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

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You try

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

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

Solve

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

-6

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

$\dfrac{-6}{1}$ $\dfrac{1}{2x}$

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

$2x+1=0$ $x=3$
$x=-\dfrac{1}{2}$

You try

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

$(p-3)(p-2)=0$

$p=2,3$

Solve

$$(m-1)(2m+3)=6m$$

$(m-1)(2m+3)-6m=0$

$2m^2-5m-3=0$

-6

$(2m+1)(m-3)=0$

$\dfrac{-6}{2m}$ $\dfrac{1}{2m}$

$m=-\dfrac{1}{2}$ $m=3$

You try

$$(x-3)(x+5) = 9$$

Solve

$$w^3 + 5w^2 - 4w = 20$$

$w^3 + 5w^2 - 4w - 20 = 0$

$w^2(w+5) - 4(w+5) = 0$

$(w+5)(w^2 - 4) = 0$

$(w+5)(w-2)(w+2) = 0$

$w = -5, 2, -2$

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You try

$$y^3 - y^2 - 9y + 9 = 0$$

Solve supposing

$$f(x) = x^2 - 5x + 4 \text{ and } f(x) = 4$$

$-4 \quad 4 = x^2 - 5x + 4 \quad -4$

$f(x) = 4$

$0 = x^2 - 5x$

$0 = x(x-5)$

$x = 0, 5$

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You try

$$g(x) = x^2 - 8x + 3 \text{ and } g(x) = 12$$
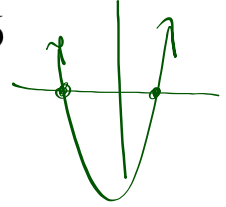
Find the zeros of the function

$$f(x) = 4x^2 - 5x - 6$$

$$0 = 4x^2 - 5x - 6$$

$$\frac{-24}{-8 \mid 3}$$

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You try
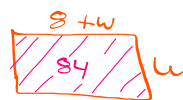
Find the zeros of the function

$$h(x) = 2x^2 + 3x - 20$$

Solve

The length of a rectangle is 8 feet more than its width. If the area of the rectangle is 84 square feet, what are the dimensions of the rectangle

8 + w

84   w

$$A = \ell w$$

$$84 = w(w + 8)$$

$$84 = w^2 + 8w$$

$$0 = w^2 + 8w - 84$$

$$0 = (w + 14)(w - 6)$$

$$w = -14, 6$$

$$\ell = 14$$

$$w = 6$$

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You try

The length of a rectangular plot of land is 6 miles less than its width. If the area of the rectangle is 135 square miles, what are the dimensions of the land.

John decides to take his company on a tour. He strikes a deal with Chicago tours. Normally, a ticket costs $20 per person, but for each person john brings in excess of 30 people, Chicago Tours will lower the price of each ticket by $.10. Assuming that John knows more than 30 employees will go on the trip and that the copacity of the boat is 120 passengers, how many employees can attend if John is willing to spend $900 for the tour?

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A ball is thown off a cliff from a height of 240 feet above sea level as shown. the height s of the ball above the water (in feet) as a function of time (in seconds) can be modeled by the function

$$s(t) = -16t^2 + 32t + 240$$

(a) when will the height of the ball be 240 feet?

(b) When will the ball strike the water?

a) $240 = -16t^2 + 32t + 240$

$0 = -16t^2 + 32t$

$0 = -16t(t-2)$

$t = 0, 2$

b) $0 = -16t^2 + 32t + 240$

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