

1) (2 points) What does it mean to factor?

Something to do with the Hockey Stick.

2) (3 points each) Find the GCF of the following:

a) x^2y^3, x^5y^3, x^4, y^2

DARN it!

I made a mistake:

The GCF is 1.

b) $-16p^7, 8p^5q, 40p^8q^2$

$$\boxed{8p^5}$$

3) (3 points each) Factor out the GCF from the following:

a) $50y^2 - 50xy^2 + 5x^2y^2$

$$\boxed{5y^2(10 - 10x + x^2)}$$

b) $5t^2(x+6) - (x+6)$

$$\boxed{(x+6)(5t^2 - 1)}$$

4) (5 points each) Factor completely:

a) $x^2 - 4x - 12$

$$\boxed{(x-6)(x+2)}$$

b) $x^2 + 10x + 25$

$$\boxed{(x+5)^2}$$

c) $(x^3 - 7x^2) + (6x - 42)$

$$x^2(x-7) + 6(x-7)$$

$$\boxed{(x-7)(x^2+6)}$$

d) $(2a^2 + ab) + (-6a - 3b)$

$$a(2a+b) - 3(2a+b)$$

$$\boxed{(2a+b)(a-3)}$$

5) (5 points) Find and explain the mistake the student made in factoring the expression $12x^2 + 6xy - 2x - y$. Then show how to correctly factor the expression:

$$12x^2 + 6xy - 2x - y$$

$$(12x^2 + 6xy) - (2x - y)$$

$$6x(2x + y) - (2x - y)$$

???

Answer may vary

6) (5 points each) S'more factoring completely:

a) $x^2(x-9) - 4(x-9)$

$$(x-9)(x^2-4)$$

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

b) $-5w^4 - 15w^3 + 90w^2$

$$-5w^2(w^2 + 3w + 18)$$

$$-5w^2(w-3)(w+6)$$

c) $x^4 - 625$

$$(x^2+25)(x^2-25)$$

$$(x^2+25)(x+5)(x-5)$$

d) $8x^3 - 8$

$$8(x^3 - 1)$$

$$8(x-1)(x^2+x+1)$$

7) (1 point each) Match the factored form to the expanded form:

S $(a+b)^2$

A: $a^2 - 2ab + b^2$

N $(a-b)^2$

B: $a^2 - b^2$

O $(a+b)(a-b)$

C: $a^3 + b^3$

W $(a+b)(a^2 - ab + b^2)$

D: $a^2 + 2ab + b^2$

Y $(a-b)(a^2 + ab + b^2)$

E: $a^3 - b^3$

8) (6 points each) Solve the following equations for the variable:

a) $(8x+7)(5x-2)=0$

$$x = -\frac{7}{8} \quad x = \frac{2}{5}$$

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

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

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

c) $-2x^4 - 28x^3 - 96x^2 = 0$

$$-2x^2(x^2+14x+48)=0$$

$$-2x^2(x+6)(x+8)=0$$

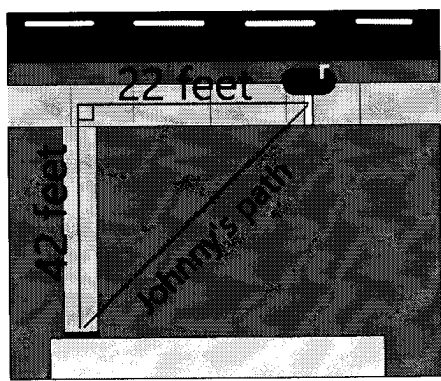
$$x = 0 \quad x = -6 \quad x = -8$$

d) $10x^2+11x+3=0$

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

$$x = -\frac{3}{5} \quad x = -\frac{1}{2}$$

9) (6 points) Johnny Cutterson never likes to walk all the way around to get to his mailbox. He instead will walk along the diagonal from his front door to his mailbox. See the figure below. How many feet does he save by cutting across the lawn instead of walking straight to the sidewalk and then turning right to walk to the mailbox? Round your final answer to 1 decimal place.



$$c^2 = 22^2 + 42^2 = 47.4 \text{ ft}$$

$$42 + 22 = 64 \text{ ft}$$

$$64 - 47.4 \text{ ft} = 16.6 \text{ ft}$$

10) (6 points) While mid-air, a cow gymnast calculates that the distance her hooves off the ground can be approximated by the function $h(t) = -16t^2 + 72t + 88$ where t is time in seconds and h is height in feet. At what time will the cow's hooves land on the ground?

$$-16t^2 + 72t + 88 = 0$$

$$-8(t+1)(2t-11) = 0$$

$$t = -1 \quad t = \frac{11}{2} = 5.5 \text{ seconds}$$

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