

WRITING PROJECT #1 EARLY BIRDS HAND IT IN NEXT FRIDAY FOR 10% BONUS.

You needn't write out the question, like I want to see on homework. Just attach the questions to the front with a staple and the "context" is all there.

You may hand in 1.2, today, and not be late, because I'm a slug and didn't grade it, yet.

S 1.5 #s 25, 26

Square Root Prop: $(x+2)^2 = -4$ Book
 $x+2 = \pm\sqrt{-4}$

(25) $(x+2)^2 = -4$

$\sqrt{(x+2)^2} = \sqrt{-4} = i\sqrt{4} = 2i$

$|x+2| = 2i$

$x+2 = \pm 2i$

$x = -2 \pm 2i$

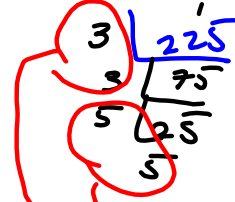
$\boxed{E} \quad 2x^2 - 9x - 18 = 0$

FACTORING BROUGHT TO YOU BY

QUADRATIC FORMULA

Discriminant $a=2, b=-9, c=-18$
 $b^2 - 4ac = (-9)^2 - 4(2)(-18)$
 $= 81 + 144$
 $= 225$

Dillon's mean spirited



$\sqrt{225} = 3 \cdot 5 = 15$

2, 3, 5, 7, 11, 13, 17, 19, 23

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
 $= \frac{9 \pm 15}{2(2)}$
 $\frac{24}{4} = 6$
 $\frac{-6}{4} = -\frac{3}{2}$

"THE CHEAT"

$x \in \left\{ -\frac{3}{2}, 6 \right\}$

$x = -\frac{3}{2}$ is a root $\rightarrow x - (-\frac{3}{2}) = x + \frac{3}{2}$ is a factor.
 $x = 6$ is a root $\rightarrow x - 6$ is a factor, so

SEE FACTOR THEOREM IN \mathbb{C}

$2x^2 - 9x - 18 = 2(x + \frac{3}{2})(x - 6)$
 $= (2x + 3)(x - 6)$

Completing the square

$$2x^2 - 9x - 18 = 0$$

$$\frac{9}{1} \cdot \frac{16}{16} + \frac{81}{16}$$

$$2 \left(x^2 - \frac{9}{2}x - \frac{18}{2} \right) = 0$$

$$\frac{144 + 81}{16} = \frac{225}{16}$$

$$\rightarrow x^2 - \frac{9}{2}x - 9 = 0$$

$$x^2 - \frac{9}{2}x + \left(\frac{9}{4}\right)^2 = 9 + \frac{81}{16}$$

$$\frac{\frac{9}{2}}{4} = \frac{9}{2} \cdot \frac{1}{2} = \frac{9}{4} \rightarrow \left(\frac{9}{4}\right)^2 = \frac{81}{16}$$

$$\left(x - \frac{9}{4}\right)^2 = \frac{225}{16}$$

$$\sqrt{\left(x - \frac{9}{4}\right)^2} = \sqrt{\frac{225}{16}}$$

$$\left|x - \frac{9}{4}\right| = \frac{\sqrt{225}}{\sqrt{16}}$$

$$x - \frac{9}{4} = \pm \sqrt{\frac{225}{16}} = \pm \frac{15}{4}$$

$$x = \frac{9}{4} \pm \frac{15}{4} \rightarrow \frac{24}{4} = 6$$

$$\rightarrow -\frac{6}{4} = -\frac{3}{2}$$

$$x \in \left\{ -\frac{3}{2}, 6 \right\}$$

$$3x^2 - 7x + 41 = 0$$

$$x^2 - \frac{7}{3}x + \frac{41}{3} = 0$$

$$17x^2 + 57x - 975 = 0$$

$$x^2 + \frac{57}{17}x - \frac{975}{17} = 0$$

$$7x^2 +$$

$$2496x^2 + 486x - 462$$

Factor it!

$$2496x^2 + 486x - 462 = 0$$

$$x^2 + \frac{b}{a}x + \left(\frac{b}{2a}\right)^2 = -\frac{c}{a} + \frac{b^2}{4a^2}$$

$$\frac{\frac{b}{a}}{2} = \frac{b}{a} \cdot \frac{1}{2} = \frac{b}{2a} \rightarrow \left(\frac{b}{2a}\right)^2 = \frac{b^2}{(2a)^2} = \frac{b^2}{4a^2}$$

$$\left(x + \frac{b}{2a}\right)^2 = \frac{b^2 - 4ac}{4a^2}$$

$$x + \frac{b}{2a} = \pm \sqrt{\frac{b^2 - 4ac}{4a^2}}$$

$$x + \frac{b}{2a} = \frac{\pm \sqrt{b^2 - 4ac}}{2|a|}$$

$$x + \frac{b}{2a} = \frac{\pm \sqrt{b^2 - 4ac}}{2a}$$

Technically $-\frac{c \cdot 4a}{4a^2} + \frac{b^2}{4a^2} = \frac{-4ac}{4a^2} + \frac{b^2}{4a^2}$

Practically $\frac{b^2 - 4ac}{4a^2}$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Quadratic Formula is DERIVED by completing the square!

$$ax^2 + bx + c = 0$$

$$x^2 + \frac{b}{a}x + \frac{c}{a} = 0$$

$$x^2 + \frac{b}{a}x = -\frac{c}{a}$$

$$2496x^2 + 486x - 462 = 0$$

$$a = 2496, b = 486, c = -462$$

$$b^2 - 4ac = 486^2 - 4(2496)(-462)$$

$$= 4848804 = 2202^2$$

$$x = \frac{-486 \pm 2202}{2(2496)}$$

$$-\frac{71}{1248}$$

$$2496 \left(x - \frac{7}{13}\right) \left(x + \frac{4}{32}\right)$$

$$(13)(32)(6) \left(x - \frac{7}{13}\right) \left(x + \frac{4}{32}\right)$$

if I
did it
right

$$-\frac{43}{312}$$

$6(13x - 7)(32x + 4)$ looks like
he's a stud @ factoring.

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

$$a=6, b=-7, c=2$$

$$b^2 - 4ac = (-7)^2 - 4(6)(2)$$

$$= 49 - 48$$

= 1 is a perfect

square, so it DOES

FACTOR!

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{7 \pm 1}{12} \rightarrow \frac{8}{12} = \frac{2}{3}$$

$$\rightarrow \frac{6}{12} = \frac{1}{2}$$

$$6(x - \frac{1}{2})(x - \frac{2}{3})$$

$$= (2x - 1)(3x - 2) \text{ Sweet!}$$

MAGIC Number! $(6)(2) = +12$

$$-7 = -6 - 1 \quad 6$$

$$= -5 - 2 \quad 10$$

$$= -4 - 3 \quad 12 \text{ Sweet!}$$

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

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

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

Sledgehammer

$$2496x^2 + 486x - 462 = 0$$

$$(2496)(-462) = -\frac{1153152}{486} \text{ MAGIC!}$$

$486 = 487 - 1$	-487 Higher!
$= 496 - 10$	-4960 Higher!
$= 506 - 20$	-10120 Higher!
$= 516 - 30$	-15480 Lower!
$= 511 - 25$	$12 \dots$ Lower
$= 510 - 24$	$12 \dots$
$= 512 - 26$	$511x - 25x$