

8.4 Homework Questions...

8.5 U-Substitution

U substitution is used to help us factor more difficult functions by substituting a "u" in for something more complex. By substituting the "u" into the question the problem becomes a GCF, X-factor, Difference/Sums of Squares and Cubes. (We are solving so your answer must be and  $x = \dots$ )

Reminder:

GCF First

3 terms x-factor

2 terms Difference of Squares (Have to be perfect squares:  $4, x^2, 16y^2$ )

2 terms Difference/Sums of Cubes

$$(a^3 + b^3) = (a + b)(a^2 - ab + b^2)$$

$$(a^3 - b^3) = (a - b)(a^2 + ab + b^2)$$

$$8x^3 - 125$$

$$(2x - 5)(4x^2 + 10x + 25)$$

Mar 14-8:17 AM

Mar 7-1:18 PM

Solve:  
 $(2x+5)^2 - 3(2x+5) - 40 = 0$

$u = 2x + 5$

$u^2 - 3u - 40 = 0$

$a=1 \quad b=-3 \quad c=-40$   
 $(u-8)(u+5)$

$u = 8 \quad u = -5$

$2x + 5 = 8$        $2x + 5 = -5$

$-5 \quad -5$        $-5 \quad -5$

$\frac{2x}{2} = \frac{3}{2}$        $\frac{2x}{2} = \frac{-10}{2}$

$x = \frac{3}{2}$        $x = -5$

Mar 7-1:18 PM

Solve:  
 $(2x-1)^2 + \frac{5}{2x-1} = -6$

$u = \frac{1}{2x-1}$

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

$(u+2)(u+3)$

$u = -2 \quad u = -3$

Mar 7-1:19 PM

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

$1 = -4(2x-1)$        $1 = -6(2x-1)$

$1 = -8x + 4$        $1 = -12x + 6$

$-1 = -4x$        $-3 = -6x$

$\frac{-1}{-4} = \frac{-4x}{-4}$        $\frac{-3}{-6} = \frac{-6x}{-6}$

$\frac{1}{4} = x$        $\frac{1}{2} = x$

Mar 14-9:46 AM

Solve:  
 $4x^3 = 8x^2$

$4x^3 - 8x^2 = 0$

$4x^2(x-2) = 0$

$4x^2 = 0$

$x = 0 \quad x = 2$

Mar 7-1:19 PM

④  $x + \sqrt{x} = 12$  Use middle power

$x + \sqrt{x} - 12 = 0$

$a=1 \quad b=1 \quad c=-12$

$\frac{-1 \pm \sqrt{1 + 48}}{2}$

$(\sqrt{x} + 4)(\sqrt{x} - 3)$

$(\sqrt{x})^2 = (-4)^2 \quad (\sqrt{x})^2 = (3)^2$

~~$x = 16$~~   $x = 9$

Mar 14-9:50 AM

⑪  $2x^{\frac{2}{3}} - 5x^{\frac{1}{3}} - 3 = 0$  middle

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

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

$(x^{\frac{1}{3}})^3 = (3)^3 \quad 2x^{\frac{1}{3}} = -1$

$x = 27 \quad \frac{2x^{\frac{1}{3}}}{2} = \frac{-1}{2}$

$(x^{\frac{1}{3}})^3 = \left(\frac{-1}{2}\right)^3 \quad x = -\frac{1}{8}$

Mar 14-9:54 AM

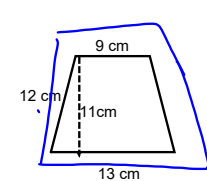
⑭  $x - 3\sqrt{x} = 0$

$x(1 - 3\sqrt{x}) = 0$

Mar 14-9:59 AM

Calendar Math (February)

Trapezoid



Area Formula

$A = \frac{1}{2} h(b_1 + b_2)$

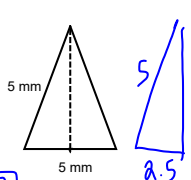
$\frac{1}{2} \cdot 11 \cdot (9 + 13) = 121 \text{ cm}^2$

Perimeter:

$13 + 12 + 9 + 12 = 46 \text{ cm}$

Mar 8-10:50 AM

Triangle



Area Formula:

$A = \frac{1}{2} bh = \frac{1}{2} \cdot 5 \cdot \sqrt{18.75}$

$10.825 \text{ mm}^2$

How can we solve for the height?

$(2.5)^2 + b^2 = 5^2$

$-(2.5)^2$

$\sqrt{b^2} = \sqrt{18.75}$

$b = 4.33$

Perimeter:

$5 + 5 + 5 = 15 \text{ mm}$

Mar 8-10:54 AM

8.4 grade 10:45

Mar 14-10:10 AM