

ALGEBRA II
HOMEWORK #1-12
SOLVING RATIONAL EQUATIONS

1. Solve for A in terms of B and C : $\frac{1}{A} + \frac{3}{B} = \frac{1}{C}$ LCD: ABC

$$\begin{array}{r}
 BC + AC = AB \\
 \underline{-AC \quad -AC} \\
 BC = AB - AC \\
 BC = A(B - C) \\
 \underline{B - C \quad B - C} \\
 \boxed{\frac{BC}{B - C} = A}
 \end{array}$$

2. What is the solution set of the equation $\frac{30}{x^2 - 9} + 1 = \frac{5}{x - 3}$?

LCD: $(x+3)(x-3)$

$$\frac{30}{(x+3)(x-3)} + \frac{1}{1} = \frac{5}{x-3}$$

$$30 + (x+3)(x-3) = 5(x+3)$$

$$30 + x^2 - 3x + 3x - 9 = 5x + 15$$

$$x^2 + 21 = 5x + 15$$

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

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

$$\boxed{x=2} \quad | \quad x=3$$

Reject (makes denominator zero)

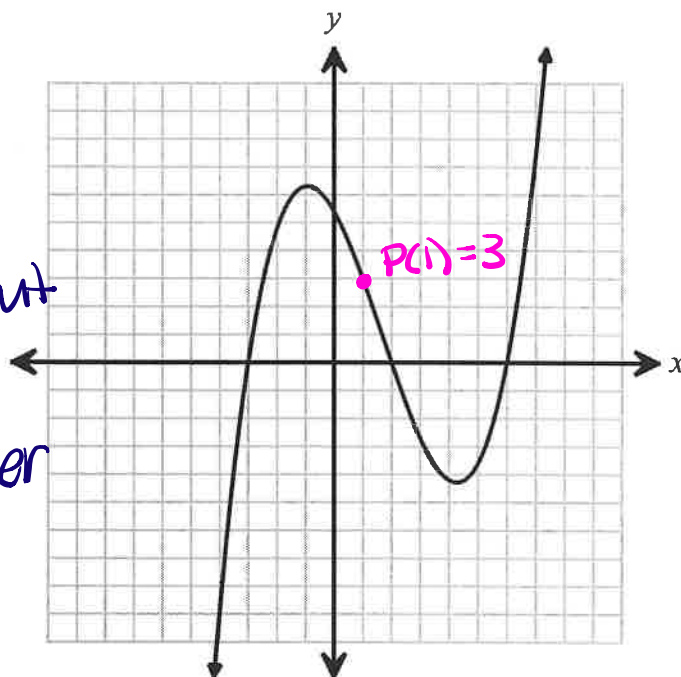
3. The graph of $p(x)$ is shown to the right. What is the remainder when $p(x)$ is divided by $x - 1$?

↳ Root: $x = 1$

$$P(1) = 3$$

When we substitute in the ROOT

The output is the Remainder



4. Given $f(x) = x^3 - 3x^2 + bx + 84$ and $f(2) = 0$, algebraically determine all the factors of $f(x)$.

→ $x - 2$ is a factor

* Solve for b

$$0 = (2)^3 - 3(2)^2 + b(2) + 84$$

$$0 = 8 - 12 + 2b + 84$$

$$0 = 2b + 80$$

$$-80 = 2b$$

$$-40 = b$$

$$\begin{array}{r} x^2 - 1x - 42 \\ x-2 \overline{) x^3 - 3x^2 - 40x + 84} \\ \underline{-(x^3 + 2x^2)} \\ -1x^2 - 40x \\ \underline{-(-1x^2 + 2x)} \\ -42x + 84 \\ \underline{-(-42x + 84)} \\ 0 \end{array}$$

$$x^2 - x - 42$$

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

Answer:

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

Self-Reflection...

☐ I got

☐ I almost got it...

☐ I need more practice...

☐ I don't get it... Help!