

# Bellwork Alg 2A Wednesday, May 3, 2017

1. Use this function:  $f(x) = 6x^3 - 19x^2 - 19x - 4$

Use the Rational Roots Theorem to make a list of possible rational roots.

2. Use this function:  $f(x) = x^4 + 5x^3 + 7x^2 + 5x + 6$

a. Use the Rational Roots Theorem to make a list of possible rational roots.

b. Out of this list of possible rational roots find one of these numbers that actually is a rational roots.

c. Use division to find the other three roots.

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Answers

1. Use this function:  $f(x) = 6x^3 - 19x^2 - 19x - 4$

Use the Rational Roots Theorem to make a list of possible rational roots.

$$\text{POSSIBLE ROOTS} = \frac{\text{FACTORS OF CONSTANT } (-4)}{\text{FACTORS OF LEADING COEF } (6)} = \frac{\pm 1, \pm 2, \pm 4}{\pm 1, \pm 2, \pm 3, \pm 6} = \pm 1, \pm 2, \pm 4, \pm \frac{1}{2}, \pm \frac{1}{3}, \pm \frac{2}{3}, \pm \frac{4}{3}, \pm \frac{1}{6}$$

2. Use this function:  $f(x) = x^4 + 5x^3 + 7x^2 + 5x + 6$

a. Use the Rational Roots Theorem to make a list of possible rational roots.

$$\text{POSSIBLE ROOTS: } \pm 1, \pm 2, \pm 3, \pm 6 = \pm 1, \pm 2, \pm 3, \pm 6$$

b. Out of this list of possible rational roots find one of these numbers that actually is a rational roots.

c. Use division to find the other three roots.

$$\begin{array}{r} -2 \overline{) 1 \ 5 \ 7 \ 5 \ 6} \\ \underline{-2 \ -6 \ -2 \ -6} \\ 1 \ 3 \ 1 \ 3 \ 0 \\ x^3 + 3x^2 + x + 3 \end{array}$$

$$\begin{array}{c} x^2 \quad x + 3 \\ \begin{array}{|c|c|} \hline x^3 & 3x^2 \\ \hline x & 3 \\ \hline \end{array} \\ +1 \end{array}$$

$$f(1) = 2 \text{ NOT A ROOT}$$

$$f(-1) = 4 \text{ NOT A ROOT}$$

$$f(2) = 100 \text{ NOT A ROOT}$$

$$f(-2) = 0 \quad -2 \text{ IS A ROOT}$$

$$(x+3)(x^2+1)$$

$$x+3=0 \quad x^2+1=0$$

$$x=-3 \quad \sqrt{x^2+1} = \sqrt{-1}$$

$$x = \pm i$$

$$\text{OTHER 3 ROOTS ARE } -3, \pm i$$