

## QUIZ REVIEW

1) Using synthetic division, to divide:

$$3x^3 - 4x^2 + 2x - 1 \text{ by } (x + 1)$$

\*remember to divide  
by the zero so  
 $x + 1 = 0 \Rightarrow x = -1$

2) Using long division, to divide:

$$x^3 - 5x^2 - x + 5 \text{ by } (x - 5)$$

3) Solve by factoring:  $x^4 + x^2 - 12 = 0$

$4^{\text{th}}$  degree trinomial  
- factor like you do a quadratic trinomial

4) Solve by factoring:  $x^3 - 27 = 0$

Difference of Cubes

5) List all possible rational roots of:

$$2x^4 + x^3 + 7x^2 + x - 10 = 0$$

$\uparrow$   
P

$\uparrow$   
Q

$\frac{P}{Q}$

# Answers to Quiz Review

①

$$\begin{array}{r} 3 \quad -4 \quad 2 \quad -1 \\ -1 \quad 5 \quad 7 \\ \hline 1 \quad -5 \quad 7 \quad 6 \end{array}$$

answer:  
 $x^2 - 5x^2 + 7x + \frac{6}{x+1}$

\* remainder means  $x+1$  is NOT a factor of  $3x^3 - 4x^2 + 2x - 1$

a)  $x-5$  is a factor of  $x^3 - 5x^2 - x + 5$  because

$$\begin{array}{r} x^2 - 1 \\ x^3 - 5x^2 - x + 5 \\ -x^3 + 5x^2 \\ \hline 0 \quad -x + 5 \\ +x - 5 \\ \hline 0 \end{array}$$

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

③  $x^4 + x^2 - 12 = 0$

$$(x^2 + 4)(x^2 - 3) = 0$$

$x^2 + 4 = 0$        $x^2 - 3 = 0$   
 $x^2 = -4$        $x^2 = 3$   
 $\sqrt{x^2} = \sqrt{-4}$        $\sqrt{x^2} = \sqrt{3}$   
 $x = \pm 2i$        $x = \pm \sqrt{3}$

4 solutions because deg 4 polynomial

4)  $x^3 - 27 = 0$       diff. of cubes

$x^3 - 3^3 = 0$        $a = x$   
 $b = 3$

$(x-3)(x^2 + 3x + 9) = 0$

$x = 3$       use quad. formula

$x = \frac{-3 \pm \sqrt{9 - 4(1)(9)}}{2} = \frac{-3 \pm \sqrt{-27}}{2} = \frac{-3 \pm 3i\sqrt{3}}{2}$

diff of cubes formula  $a^3 - b^3 = (a-b)(a^2 + ab + b^2)$

5)  $p = 10: \pm 1, \pm 2, \pm 5, \pm 10$   
 $q = 2: \pm 1, \pm 2$   
 possible rat'l roots:

$$\pm 1, \pm 2, \pm 5, \pm 10, \pm \frac{1}{2}, \pm \frac{5}{2}$$

quadratic Formula

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

STUDY !!!