Trig

Review Ch. 4

Quiz 4.3-4.4 today

Test is tomorrow!

Determine whether each number is a root of $a^3 - 3a^2 - 3a - 4 = 0$. Explain.

11. 0 12. 4 13. -2

4 | 1 −3 −3 −4

↓ 4 4 4

1 1 1 0

$x^2 + x + 1$

$\frac{-1 \pm \sqrt{3}}{2}$

$\frac{-1 \pm \sqrt{1-4}}{2}$

$a = 4$

$a = -\frac{1}{2} + \frac{\sqrt{3}}{2}i$

$a = -\frac{1}{2} - \frac{\sqrt{3}}{2}i$

$b^2 - 4ac$

Find the discriminant of each equation and describe the nature of the roots of the equation. Then solve the equation by using the Quadratic Formula.

16. $2x^2 - 7x - 4 = 0$

$(-7)^2 - 4 \cdot 2 \cdot -4$

$49 + 32 = 81$

$x = \frac{7 \pm \sqrt{81}}{4}$

$x = \frac{7 \pm 9}{4}$ $\quad \frac{16}{4}$ $\quad -\frac{2}{4}$

$x = 4$

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

Use the Remainder Theorem to find the remainder for each division. State whether the binomial is a factor of the polynomial.

22. $(x^3 - x^2 - 10x - 8) \div$ [redacted]

$x = -2$

-4 | -2 | 1 | -1 | -10 | -8

-4 | 1 | -2 | 6 | 8

-3 | 1 | -3 | -4 | 0

$x^2 - 3x - 4$

$(x-4)(x+1)(x+2)$

List the possible rational roots of each equation. Then determine the rational roots.

26. $x^3 - 2x^2 - x + 2 = 0$

$x = 1$

$x = 2$

$x = -1$

$\pm \frac{1, 5, 7, 35}{1, 2, 3, 6}$

$\pm\left(1, \frac{1}{2}, \frac{1}{3}, \frac{1}{6}, 5, \frac{5}{2}, \frac{5}{3}, \frac{5}{6}, 7, \frac{7}{2}, \frac{7}{3}, \frac{7}{6}, 35, \frac{35}{2}, \frac{35}{3}, \frac{35}{6}\right)$

$x^2 - x - 2$

$(x-2)(x+1)$

1	1	-2	-1	2
		1	-1	-2
	1	-1	-2	0

Find the number of possible positive real zeros and the number of possible negative real zeros for each function. Then determine the rational zeros.

34. $f(x) = x^3 - x^2 - 34x - 56$

1, 2, 4, 14, 28, 56, 7, 8

$x = -4$

$x = -2$

$x = 7$

(+) 1

(−) 2, 0

(+) 0, 2

$-4 \mid 1 \quad -1 \quad -34 \quad -56$

$\quad\quad -4 \quad 20 \quad 56$

$1 \quad -5 \quad -14 \quad 0$

-14

$-7 \quad 2$

-5

$x = \frac{5 \pm \sqrt{25 - -56}}{2}$

$\frac{5 \pm \sqrt{81}}{2}$

$\frac{5 \pm 9}{2}$

$\frac{14}{2}$

$5 - 9 = -4$

$\frac{-4}{2}$

possible rational $\pm \frac{p}{q}$

poss. pos. 4, 2, 0

poss neg 3, 1

all sol.