MAT 170 Test 2 Review Answers

Please let me know if you find any incorrect answers.

A. Zeros of a Polynomial 1. 0, $\frac{7}{2}\pm\frac{1}{2}\sqrt{5}$ 2. 5, – 8, $\frac{3}{2}$ 3. 1, – 1, 3

B. Zeros and Multiplicities 1.zero at $\frac{-5}{2}$ mult. 1 and zero at 2 mult. 2

2. zero at –2 with mult. 1 and zero at 1 with mult. 2

3. zeros at –4, $\frac{5}{3}$, –5 with mult. of 1 for each.

C. End Behavior of Polynomials 1. rises left, falls right 2. falls left, falls right
3. falls left, rises right

D. Long or Synthetic Division 1. Q: $2x^3-2x^2-4x+4$ R: –3 2. Q: $2x-3$ R: –2
3. Q: $2x^2-x-1$ R: 0

E. More with polynomials and zeros

1. 0, multiplicity 4; –3, multiplicity 2; 7, multiplicity 8
2. $p(x)=(x^2+9)(x+4)^2$ 3. $p(x)=(x-5)(x^2-4x+13)$

F. Vertical Asymptotes 1. $x=-1$ and $x=1$ 2. $x=-\frac{1}{3}$ 3. $x=2$

G. More with rational functions 1. $r(x)=\frac{9(x-2)(x-7)}{(x-4)(x+5)}$

H. Applications of Rational Functions 1. 5 hundred

2. 15 is the H.A., the average cost when producing a great number of games is $15.
3. 0.16 ppm is the concentration after a long time.

I. Rewrite in the equivalent logarithmic for 1. $\log_a(65)=x+1$ 2. $\ln(5)=3x$

J. Rewrite in the equivalent exponential form 1. $4x=6^{10}$ 2. $B=e^A$

K. Compound interest 1. a) $31,050.37 b) $31,078.69

2. a) $13,745.79 b) $14,861.26

L. Properties of Logarithms 1. $5\log(x)+7\log(y)-3\log(z)$

2. $\frac{3}{2}\ln(x-1)+2\ln(y+3)-4\ln(z)$ 3. a) $\ln\left(\frac{x^2w^9}{y^5}\right)$ b) $\ln\left(\frac{x+3}{x}\right)$

4. a) $\log\left(\frac{A^3C^5}{B^4D^6}\right)$ b) $\log\left(\frac{8x-8}{x}\right)$

M. Exponential Equations 1. a) –7 b) $\frac{7+\ln(1/2)}{3} = \frac{7-\ln(2)}{3} \approx 2.102$

2. a) $\ln 5 \approx 1.609$ b) $\frac{\ln(3)}{\ln(7)} = \log_7(3) \approx 0.56458$ c) $\ln\left(\frac{5}{2}\right) \approx 0.916$

N. Domain of Logarithms function 1. a) $(-\infty,3)$ b) $(-4,\infty)$

O. Logarithms Equations 1. a) $(\frac{19}{2},0)$ b) (-1,0) 2. a) $\frac{36}{7}$ b) $\frac{1}{2}$

P. Applications of Exponential Equations 1. 15.93 days

2. $P = 20000e^{.044629t}$; 44,658

3. i) 439.93 gm ii) 387.07 gm iii) $\frac{\ln 2}{k} = \frac{\ln 2}{0.032}$ = 21.66 years