MAT 170 Test 2 Review Answers

There is a reasonable assumption that most of these answers are correct. If you find any incorrect answers, please contact your instructor as soon as possible.

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: 4.zero at $\frac{-5}{2}$ mult. 1 and zero at 2 mult. 2

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

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

C. End Behavior of Polynomials: 7. rises left, falls right 8. falls left, falls right
9. falls left, rises right

D. Long or Synthetic Division: 10. Q: $2x^3 - 2x^2 - 4x + 4$ R: –3
11. Q: $2x - 3$ R: –2 12. Q: $2x^2 - x - 1$ R: 0

E. Vertical Asymptotes: 13. $x = \pm 1$ 14. $x = -\frac{1}{3}$ 15. $x = 2$

F. Applications of Rational Functions: 16. 5 hundred

17. y = 15 is the H.A., the average cost when producing a great number of games is \$15.

18. 0.16 ppm is the concentration after a long time.

G. Rewrite in the equivalent logarithmic form: 19. $\log_a(65) = x + 1$
20. $\ln(5) = 3x$

H. Rewrite in the equivalent exponential form: 21. $4x = 6^{10}$ 22. $B = e^A$

I. Compound interest: 23. a) \$31,050.37 b) \$31,078.69
24. a) \$13,745.79 b) \$14,861.26

J. Properties of Logarithms: 25. $5\log(x) + 7\log(y) - 3\log(z)$
26. $\frac{3}{2}\ln(x-1) + 2\ln(y+3) - 4\ln(z)$

27. a) $\ln\left(\frac{x^2 w^9}{y^5}\right)$ b) $\ln\left(\frac{x+3}{x}\right)$ 28. a) $\log\left(\frac{A^3 C^5}{B^4 D^6}\right)$ b) $\log\left(\frac{8x-8}{x}\right)$

K. Exponential Equations: 29. a) –7 b) $\frac{7+\ln(1/2)}{3} = \frac{7-\ln(2)}{3} \approx 2.102$

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

L. Domain of Logarithms function: 31. a) $(-\infty,3)$ b) $(-4,\infty)$

M. Logarithms Equations: 32. a) $(\frac{19}{2},0)$ b) (-1,0) 33. a) $\frac{36}{7}$ b) $\frac{1}{2}$

N. More with polynomials and zeros:

34. 0, multiplicity 4; –3, multiplicity 2; 7, multiplicity 8

35. $p(x) = (x^2+9)(x+4)^2$ 36. $p(x) = (x-5)(x^2-4x+13)$

O. More with rational functions:

37. $r(x) = \frac{9(x-2)(x-7)}{(x-4)(x+5)}$

P. Applications of Exponential Equations:

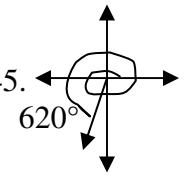
38. 15.93 days

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

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

Q. Angles and Radian Measures:

41. a) $-\frac{5\pi}{4}$ b) 270° 42. a) 320° b) $\frac{\pi}{2}$ 43. 16.76 cm 44. 114.59°

45. 

coterminal angles: 260°, –100° reference angle: 80°