

MAT170 Review Problems for Exam2

A. Zeros of a Polynomial – Sections 2.3-2.5

Algebraically solve $f(x) = 0$ for the following equations:

1. $f(x) = x^3 - 7x^2 + 11x$, given that 0 is a zero of $f(x)$.
2. $f(x) = 2x^3 + 3x^2 - 89x + 120$, given that 5 is a zero of $f(x)$.
3. $f(x) = x^3 - 3x^2 - x + 3$, given that 1 is a zero of $f(x)$.

B. Zeros and Multiplicities – Section 2.3

Algebraically find all the zeros and their multiplicities for the following functions:

4. $f(x) = 2x^3 - 3x^2 - 12x + 20$
5. $f(x) = x^3 - 3x + 2$
6. $f(x) = 3x^3 + 22x^2 + 15x - 100$

C. End Behavior of Polynomials – Section 2.3

Use the leading coefficient test to determine the end behavior of the following polynomial functions:

7. $f(x) = -2x^3 + x - 2$
8. $f(x) = -x^{10} - 3x^9 + x^2$
9. $f(x) = 2x^3 + x - 2$

D. Long or Synthetic Division – Section 2.4

Divide the following using long or synthetic division:

10. $\frac{2x^4 - 6x^2 + 1}{x + 1}$
11. $\frac{4x^2 - 8x + 1}{2x - 1}$
12. $\frac{2x^3 - 7x^2 + 2x + 3}{x - 3}$

E. Vertical Asymptotes – Section 2.6

Find the equation of the vertical asymptotes (if any) of the following functions:

13. $f(x) = \frac{3x + 2}{x^2 - 1}$
14. $f(x) = \frac{x + 4}{3x + 1}$
15. $f(x) = \frac{x + 2}{x^2 - 4}$

40. A sample of 500 grams of radioactive lead 210 decays to polonium 210 according to the function $A(t) = 500e^{-0.032t}$ where t is in years. Find the amount of the sample remaining after
- (i) 4 years (ii) 8 years (iii) Find the half-life

Q. Angles and Radian Measures (Section 4.1)

41. (a) Convert the angle -225° to radians. Express answer as a multiple of π .
(b) Convert the angle $\frac{3\pi}{2}$ radians to degrees.
42. (a) Find a positive angle less than 360° that is coterminal with the angle -760° .
(b) Find a positive angle less than 2π radians that is coterminal with the angle $\frac{17\pi}{2}$.
43. Find the length of arc on a circle with radius $r = 16$ inches intercepted by a central angle $\theta = 60^\circ$. Round the answer to 2 decimal places.
44. If the length of the arc on a circle of radius 10 cm is 20 cm, find the measure of the central angle in degrees.
45. Draw 620° in standard position. Find a coterminal angle for 620° between 0° and 360° . Find a coterminal angle less than zero for 620° . Find the reference angle for 620° .