

Math 1050
Test 2
Practice

1. Find all solutions (accurate to 2-decimal places) of $x^5 - 5x^3 + 6x = 0$.

2. Find the coefficients for the polynomial function of lowest degree, having integer coefficients (leading coefficient 1) with the zeros 2, -3, and i .

3. From the graph of the function $g(x) = \frac{3x^2 - 12}{x^2 - 2x - 3}$,

(a) Find all vertical asymptotes.

(b) Find any horizontal asymptotes.

(c) Locate all x -intercepts.

4. Each graph below is the graph of one of the listed functions. For each graph, identify the polynomial function.

a) $f(x) = x^2(x-1)(x+2)$

b) $f(x) = x(x+1)(x-2)$

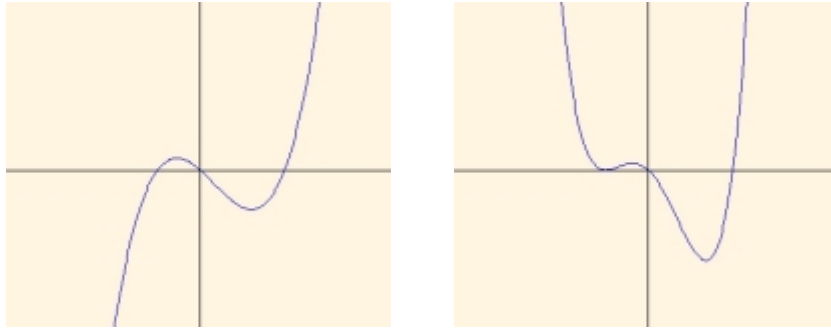
c) $f(x) = x(x+1)^2(x-2)$

d) $f(x) = x^2(x-1)^2(x-2)$

e) $f(x) = x^2(x-1)^2(x+2)$

f) $f(x) = x(x+1)^2(x+2)$





5. Given that the number $\sqrt{3}$ is one zero of the polynomial function

$$f(x) = x^4 - x^3 - 9x^2 + 3x + 18, \text{ find all zeros of } f.$$

6. A rectangular box with a top is to have a base whose length is 4 times its width and whose volume is 2400 cubic inches. Let the variable x denote the width of the box, and let $S(x)$ be the amount of material used to construct the box.

a) Express $S(x)$ as a function of x .

b) Graph $y = S(x)$ and trace to estimate (1 decimal place accuracy) the minimum value for $S(x)$.

7. Find the solution of $\ln(x^2 - 8x + 16) = 0$.

8. Write an equation for the inverse of the function given by

$$f(x) = 4e^{2x-3} + 5 .$$

9. A sample culture contains approximately 800 bacteria when first measured and 5 hours later the number has doubled to 1600.

a) Find a formula for $A(t)$, the number of bacteria at time t hours after the initial measurement.

b) What is the number of bacteria at the end of 24 hours?

c) How long does it take for the number to increase to 25,000 bacteria ?

10. The line $x = 1$ is a vertical asymptote for which of the following rational functions?

(i) $\frac{x+4}{x^2+x}$

(ii) $\frac{x^2-5x+4}{x^2-x}$

(iii) $\frac{x+1}{x^2-x}$

(iv) $\frac{x^2-5x+4}{x^2-2x+1}$