Calculus Pre-Test No Calculators

- **1)** Identify the symmetry:  $f(x) = x^2 + x 4$  **d.** Not symmetrical
- 2) Identify the symmetry:  $f(x) = x^3 6x$
- **3)** Identify the symmetry:  $f(x) = x^4 + 8$

True or false:

- 4) A function can be symmetrical to an axis AND the origin at the same time. **False**
- 5) A function can be symmetrical to the x-axis. **False**
- 6) A function can be symmetrical to the y-axis AND have a y-intercept.
- If (3, -2) is a point on a graph that is symmetric with respect to the x-axis, then (-3, -2) is also a point on the graph.
  False
- 8) Find **all** intercepts of the function  $f(x) = x^2 + 8x 20$ . MORE THAN ONE ANSWER IS POSSIBLE! a. (0, -20) d. (-10, 0)
  - b. (10, 0) e. (-2, 0)
  - c. (2, 0) f. (-20, 0)

9) Find **all** intercepts of the function  $f(x) = x\sqrt{16 - x^2}$ . MORE THAN ONE ANSWER IS POSSIBLE!

- a. <u>(16, 0</u>) d. <mark>(-4, 0</mark>)
- b. (4, 0) e. (0, 0)
- c. (0, 4) f. (0, 16)
- 10) Find the points of intersection of the graphs of the following equations: MORE THAN ONE ANSWER IS POSSIBLE!

$$\begin{array}{l} x - y = 1 \\ x^2 + y^2 = 5 \end{array}$$

a. (3, 2)	d. (0, -1)
b. <mark>(-1, -2)</mark>	e. <mark>(2, 1</mark> )
c. (√5,0)	f. None of these

11) Find the line that is perpendicular to y - 2x = 4 that passes through the point (2, 7)

a. y = 2x + 3b. y = -2x + 11c. y = 2x + 4d.  $y = -\frac{1}{2}x + 8$ e. y = 2x + 4

c.  $y = \frac{1}{2}x + 6$  f. None of these

12) Find the line that is parallel to y - 2x = 4 that passes through the point (2, 7)

- a. y = 2x + 3b. y = -2x + 11d.  $y = -\frac{1}{2}x + 8$ e. y = 2x + 4
- c.  $y = \frac{1}{2x} + 6$  f. None of these
- General Form G 13) a. y = mx + bE Vertical line 14) b. y - b = mxC 15) Horizontal line c. y = bPoint-slope form **D** d.  $y - y_1 = m(x - x_1)$ 16) Slope-intercept form 17) e. x = a Α f. Ax = Byq. Ax + By + C = 0

True

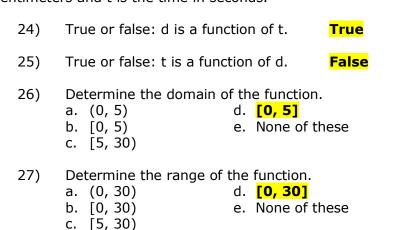
b. Symmetrical to the origin

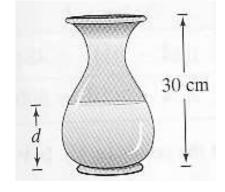
c. Symmetrical to the y-axis

18) Find the slope of the line passing through the points (3, -1), (-2, -6)1 19) Find the y-intercept of the line that passes through the points (3, -1), (-2, -6)-4 20) True or false: The following points are collinear (2, -2), (-2, 1), (-1, 0)False 21) True or false: It is possible for two lines with negative slopes to be perpendicular. False Given  $f(x) = x^2 - 3$ , find f(8)22) 61 Given  $f(x) = x^2 - 3$ , find  $\frac{f(x + \Delta x) - f(x)}{\Delta x}$ 23) c. **2x +** ∆**x** a. Δx b.  $\frac{x^2 + \Delta x^2 - 3}{\Delta x}$ 

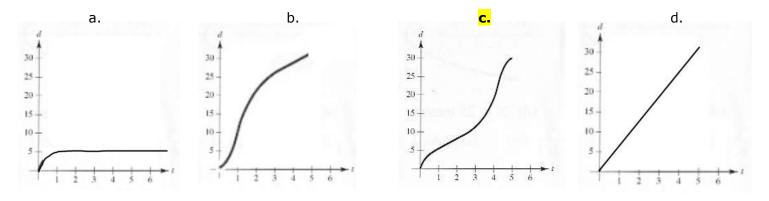
Water runs into a vase of height 30 centimeters at a constant rate. The vase is full after 5 seconds. Use this information and the shape of the vase shown to answer questions 24 - 28 if d is the depth of the water in centimeters and t is the time in seconds.

d. None of these





28) Which of the following graphs could be a model of the function?



Determine whether the function is even, odd or neither  $f(x) = x^2 + 2x + 2$ 29)

a. Even b. Odd c. Neither 30) g(x) = 1 + sinxb. Odd c. Neither a. Even

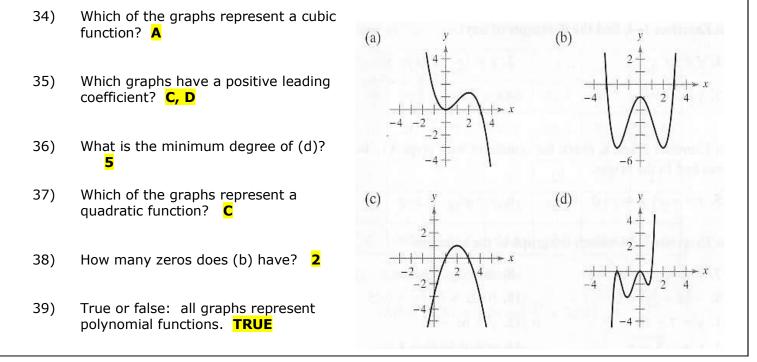
31)	$h(x) = x^4 - x^2$		
	a. <mark>Even</mark>	b. Odd	c. Neither
32)	m(x) = xcosx		
	a. Even	b. <mark>Odd</mark>	c. Neither

. .2

33) An open box is to be made from a rectangular piece of material 9 inches by 12 inches by cutting equal squares from each corner and turning up the sides. Let x be the length of each side of the square cut out of each corner. Write the volume V of the box as a function of x.

a)	$V = x^3$	b)	V = 108x
c)	V = x(9 - x)(12 - x)	d)	V = x(9 - 2x)(12 - 2x)
e)	None of these		

Use the graphs to the right to answer questions 34 – 39. MORE THAN ONE ANSWER IS POSSIBLE FOR EACH QUESTION. GRAPHS MAY BE USED MORE THAN ONCE.



40)	Find the equa	tion of the vertical	line that passes through	gh the poir	nt (-1, 4)	
	a. <mark>x = -1</mark>	b. x = 4	c. y = 4	d.	y = -1	e. None of these