ARE YOU READY FOR CALCULUS?

Please show all your work for the following problems. IF YOU DON'T SHOW IT, YOU DON'T KNOW IT!

Sketch the graph of the equation by point plotting.

1) $y = 6 - 2x$ Hint: Did you make a table, did you plot the points, did you make intervals?

2) $y = \sqrt{2x - 1}$ Hint: Did you make a table, did you plot the points, did you make intervals?

Use the graphing calculator to approximate the coordinate of each solution point to two decimal places.

3) $y = x^5 - 5$ (a) (-0.5,y) (b) (x,-4) Hint: Use Calculator, graph and use 2nd, calc,value…..

Find any intercepts.

4) $y = x^3 - 4x$ Hint: Use calculator, graph, and 2nd, calc, zero to find 3 x-int and 1 y-int.

5) $y = (x-1)\sqrt{x^2+1}$ Hint: Use calculator, graph, and 2nd, calc, zeros. 1 x-int and 1 y-int.

Test for symmetry.

Hint: y-axis symmetry put in –x for x, simplify. If you get original equation, it has y-axis sym.
x-axis symmetry put in –y for y, simplify. If you get original equation, it has x-axis sym.
origin symmetry put in –x for x and –y for y, simplify. If you get original equation, it has origin symmetry.

6) $y = x^2 - x$

7) $y = \dfrac{x^2}{x^2+1}$

Sketch the graph, find any intercepts and test for symmetry.

Hint: 8 is a circle. Use calculator, graph, and 2nd,calc,zero to find x-int. See hint above for symmetry test.

8) $y^2 = -x^2 + 4$

9) $y = |6 - x|$

Find points of intersection of the two equations.

Hint: Use calculator to graph, 2nd calc, intersect to find intersection.

10) 2x-3y =13 and 5x+3y =1

11) $y = x^3 - 4x$ and $y = -(x+2)$

Find the slope of line the passing through the two points.

Hint: $\dfrac{y_2 - y_1}{x_2 - x_1}$

12) (1,2) and (-2,4)

13) (3,-2) and (4,-2)

Find the slope and the y-intercept of the line. Hint: change to y=mx+b (m is slope, b is y-int)

14) $6x-5y=15$

Find the equation of the line that passes through the point & with the indicated slope.

15) (-1,2), m undefined Hint: this is a vertical that goes through x=-1

16) (0,4) m = $\frac{-2}{3}$ Hint: Use $y-y_1=m(x-x_1)$

Find the equation of the line through the given points.

Hint: Find slope using $\frac{y_2-y_1}{x_2-x_1}$ and then pick one point and use $y-y_1=m(x-x_1)$

P.S. final answer should be in y=mx+b form…..

17) (0,0), (-1,3)

18) $\left(\frac{7}{8},\frac{3}{4}\right),\left(\frac{5}{4},\frac{-1}{4}\right)$

Write the equation of the line passing though the point and parallel and perpendicular to the line.

Hint: Change to y=mx+b form. Parallel lines have same slope, perpendicular have opposite reciprocals.

Use $y-y_1=m(x-x_1)$

P.S. final answer should be in y=mx+b form…..

19) (-6,4) $3x+4y=7$

Use the calculator to find the intersection of the two graphs and find the equation of the line through these points of intersection.

Hint: Use calculator to graph, 2nd calc, intersect to find intersection.

20) $y=x^2$ and $y=4x-x^2$

Determine if the points are collinear.

Hint: Find the slope between each pair of point. If slopes are same, collinear. Just don't say yes or no. Say why they are collinear or not collinear!

21) (0,4), (7,-6), (-5,11)

Hint: Just put what in in parenthesis into function, that is all. For 23 use you trig tables (decimals are not allowed).

22) Evaluate $f(x)=\sqrt{x+3}$ at the given points. $f(-2), f(6), f(c), f(c+\Delta x)$

23) Evaluate $f(x)=\sin x$ at the given points. $f(\pi), f(\frac{5\pi}{4}), f(\frac{2\pi}{3})$

Find the domain and range of the functions.

Hint: Domain: What values can x be, range what values can y be. Graph and then use things like $(-\infty,\infty)$

24) $g(x)=x^2-5$

25) $g(x)=\frac{2}{x-1}$

Sketch the function and determine domain and range.
Hint: Use calculator to draw graph and actually sketch on your paper.

26) $g(x)=\frac{4}{x}$

27) $g(x)=-5\cos\frac{x}{2}$

28) Simplify $\frac{x^3-9x}{x^2-7x+12}$ Hint: Factor top (start by taking out an x). Factor bottom (reverse FOIL)and cross out like terms/expressions

29) Simplify $\frac{x^2-2x-8}{x^3+x^2-2x}$ Hint: Factor top (reverse FOIL). Factor bottom (start by taking out an x).

30) Simplify $\frac{\frac{1}{x}-\frac{1}{5}}{\frac{1}{x^2}-\frac{1}{25}}$ Hint: LCD for top fractions, LCD for bottom fractions, then flip bottom faction over and simplify

31) Rationalize the denominator $\frac{2}{\sqrt{3}+\sqrt{2}}$ Hint: use $\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ to rationalize

32) Rationalize the denominator $\frac{4}{1-\sqrt{5}}$ Hint: use $\frac{1+\sqrt{5}}{1+\sqrt{5}}$ to rationalize

Write each of the following expressions in the form ca^pb^q where c,p and q are numbers

33) $\frac{(2a^2)^3}{b}$ Hint: don't forget to raise the 2 to the third power also

34) $\sqrt{9ab^3}$ Hint: change radical into rational exponent

35) $\frac{a(2/b)}{3/a}$

36) $\frac{ab-a}{b^2-b}$ Hint: Factor first

37) $\frac{a^{-1}}{(b^{-1})\sqrt{a}}$ Hint: Change radical into rational exponent

38) $(\frac{a^{2/3}}{b^{1/2}})^2(\frac{b^{3/2)}}{a^{1/2}})$

Solve for x (do not use a calculator).

39) $5^{x+1}=25$

40) $\frac{1}{3} = 3^{2x+2}$

41) $\log_2 x = 3$

42) $\log_3 x^2 = 2\log_3 4 - 4\log_3 5$

Simplify.

43) $\log_2 5 + \log_2(x^2 - 1) - \log_2(x - 1)$

44) $\log_{10}(10^{(1/2)})$

45) $\log_{10}(\frac{1}{10^x})$

Solve for the indicated variables.

46) $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1; a$

47) $V = 2(ab + bc + ca); a$

48) $2x - 2yd = y + xd; d$

Find the remainders on division of:

49) $x^5 - 4x^4 + x^3 - 7x + 1$ by $(x + 2)$

50) $x^5 - x^4 + x^3 + 2x^2 - x + 4$ by $x^3 + 1$

51) The equation $12x^3 - 23x^2 - 3x + 2 = 0$ has $x = 2$ as a solution. Find all others.