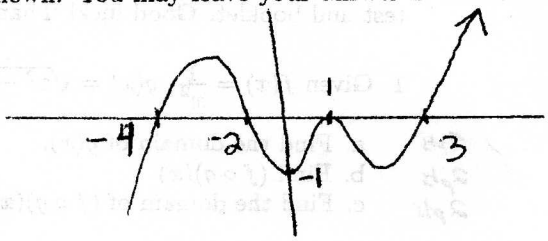
5pts 9. Find the polynomial function of least degree whose graph is shown. You may leave your answer in factored form.



10. Solve the following equations:

3pts a. $x^3e^x = x^2e^x + 2xe^x$

3pts b. $3^{x+1} = 7^{2x-1}$

3pts c. $log_2(x) + log_2(x+2) = 3$

5pts 11. The air pressure, $p(h)$, (in lb/in^2) at an altitude of h feet above sea level may be approximated by the formula $p(h) = 14.7e^{-0.0000385h}$. At approximately what altitude h is the air pressure one-half its value at sea-level?

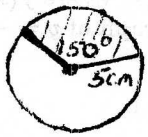
12. Find the exact value of each of the following

2pts a. $cos(\frac{-5\pi}{4})$

2pts b. $sin(sin^{-1}(\frac{\pi}{3}))$

2pts c. $cos(15°)$, (hint: use a difference identity formula)

3pts 13. Find the area of the sector of the circle shown in the figure .



6pts 14. If $cot(\theta) = \frac{-7}{24}$, and $sin(\theta) > 0$, find the exact values of the other five trigonometric functions for the acute angle θ.

5pts 15. Find ALL solutions of $tan(2x) - 1 = 0$

16. For $y = 2cos(3x - \pi)$, find

1pt a. The amplitude

1pt b. the period

1pt c. The phase shift

3pts d. Sketch the graph of one cycle.

4pts 17. Approx. the angle of elevation, α, of the sun if a person 5 ft. tall casts a shadow 4 ft long on level ground.

2pts 18. Find the exact value of $sin(2\theta)$ if $cos(\theta) = \frac{3}{5}$, $0° < \theta < 90°$

19. Solve the oblique triangle ABC if

2pts a. $\beta = 81°$, $b = 11$, and $c = 12$

2pts b. $a = 2$, $b = 3$, and $c = 4$.