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:
   a. $x^3e^x = x^2e^x + 2xe^x$
   b. $3^x + 1 = 7^{2x - 1}$
   c. $\log_2(x) + \log_2(x + 2) = 3$

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:
   a. $\cos\left(-\frac{5\pi}{4}\right)$
   b. $\sin(\sin^{-1}\left(\frac{2}{3}\right))$
   c. $\cos(15^\circ)$, (hint: use a difference identity formula)

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

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 $\theta$.

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

16. For $y = 2\cos(3x - \pi)$, find
   a. The amplitude
   b. the period
   c. The phase shift
   d. Sketch the graph of one cycle.

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

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

19. Solve the oblique triangle $ABC$ if
   a. $\beta = 81^\circ$, $b = 11$, and $c = 12$
   b. $a = 2$, $b = 3$, and $c = 4$. 