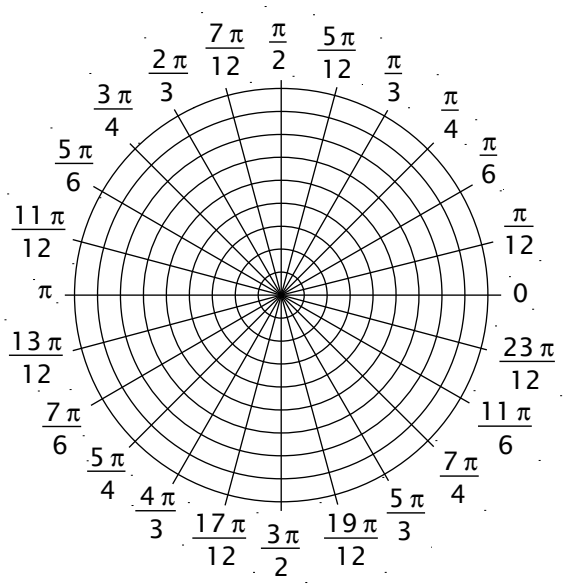
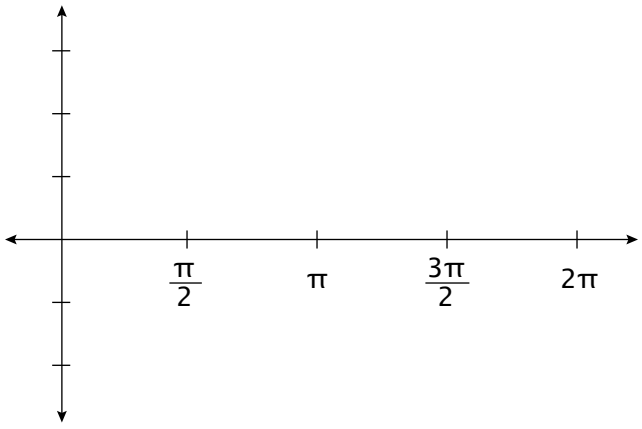
FINAL EXAM

Graph.

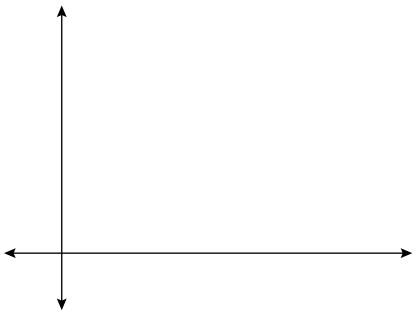
1. $r = \frac{2}{\cos\theta}$



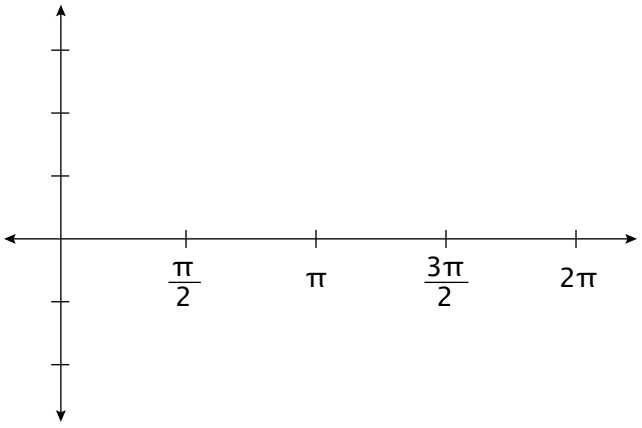
2. $y = 3 \sin x$



3. $f(x) = e^x$



4. $y = \tan x$



Solve for x.

5. $e^{2x} - e^{x} = 2$

6. $\frac{\sqrt{x+3}}{2} < 1$

7. $|x - 2| < -1$

8. $e^{2x} = 5$

Prove the identities.

9. $\tan \theta \csc \theta = \sec \theta$

10. $\csc^2\theta[\sin^2(90° - \theta)] + 1 = \csc^2 \theta$

Evaluate.

11. $\lim_{x \to \infty} \frac{1}{x}$

12. $\lim_{x \to -5} \frac{x^2 + 3x - 10}{x + 5}$

13. $\sum_{i=1}^{4} \{i^2 - 1\}$

14. sin 135° + cos 60°

Follow the directions.

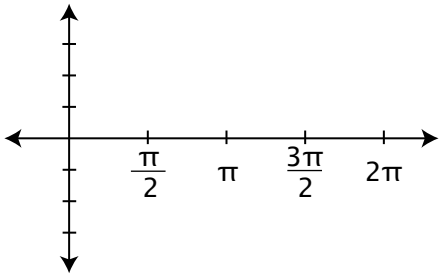
15. If $f(x) = 2X - 3$ and $g(x) = X^2 + 1$, find $f(g(x))$.

16. Give the domain and range of the following function: $f(x) = \sqrt{x + 3}$

17. Change $7\pi/4$ radians to degrees.

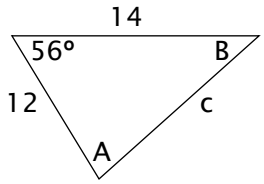
18. Give the reference angle and the quadrant for 250°.

19. Graph $2 \sin x - 1$, using the graph at right.



20. Find the first four terms of the following geometric sequence, with $a_1 = -4$ and $r = 1/2$.

21. Solve for the unknown sides and angles for the triangle shown.



22. The decay constant of a substance is determined to be .0069. How much of 10 grams will remain after 365 days? Use $Q(t) = 10e^{-kt}$, where t = time in days and Q(t) is the quantity remaining at time t.