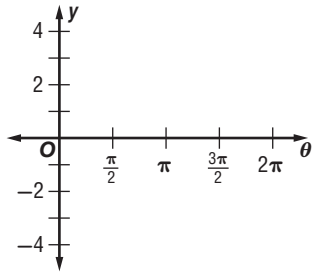


13-8 Practice

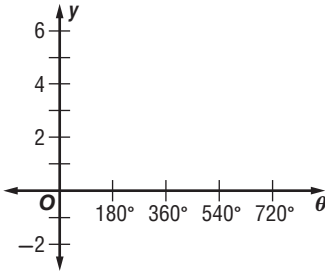
Translations of Trigonometric Graphs

State the amplitude, period, phase shift, and vertical shift for each function. Then graph the function.

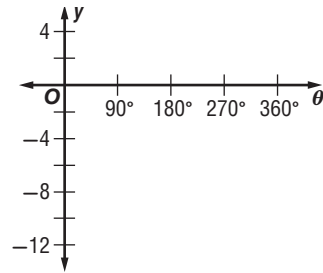
1. $y = \frac{1}{2} \tan \left(\theta - \frac{\pi}{2} \right)$



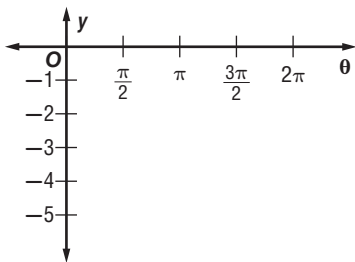
2. $y = 2 \cos (\theta + 30^\circ) + 3$



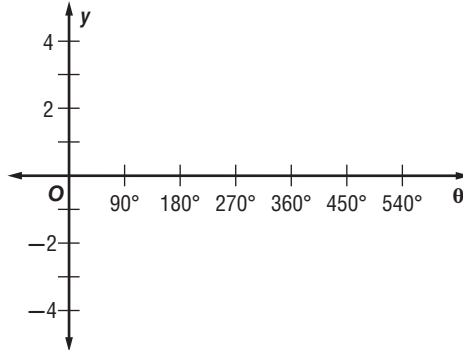
3. $y = 3 \sin (2\theta + 60^\circ) - 2.5$



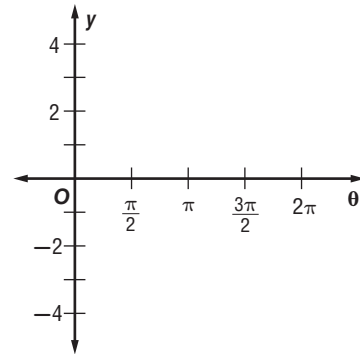
4. $y = -3 + 2 \sin 2 \left(\theta + \frac{\pi}{4} \right)$



5. $y = 3 \cos 2 (\theta + 45^\circ) + 1$



6. $y = -1 + 4 \tan (\theta + \pi)$



7. **ECOLOGY** The population of an insect species in a stand of trees follows the growth cycle of a particular tree species. The insect population can be modeled by the function $y = 40 + 30 \sin 6t$, where t is the number of years since the stand was first cut in November, 1920.

- a. How often does the insect population reach its maximum level?
- b. When did the population last reach its maximum?
- c. What condition in the stand do you think corresponds with a minimum insect population?