

12. Use the symmetry tests to determine whether the graph of the following equation is symmetric about the x -axis, the y -axis or the origin: $y^3 = -2x - 4x^5$.

13. If F is a linear function such that $F(1) = 3$ and $F(-2) = -7$, then $F(10) = ?$

14. At the start of an experiment there are 175,000 bacteria in a petrie dish. Three hours later 200,000 bacteria are present.

- Express the number of bacteria as a function of time t .
- When will there be 250,000 bacteria present? Round your answer to the nearest tenth.

15. Simplify as much as possible:

$$\sin(B + \pi) + \cos\left(\frac{\pi}{2} + B\right).$$

16. Solve for x
 $\log_2 x = 2 - \log_2(x - 3)$

17. Let $P(x, y)$ be a point on the curve $y = 9 - x^2$ in the first quadrant. As a function of x alone, express the area and perimeter of the rectangle whose corners are the points $(0, 0)$, $(x, 0)$, $(0, y)$, and (x, y) .

18. Prove the identity

$$\sin^2 t - \cos^2 t = \frac{1 - \cot^2 t}{1 + \cot^2 t}.$$

19. Let $f(x) = -\ln(1+x) + 3$. 20. Let $f(x) = e^{-x+2} - 3$.

- What is the domain of $f(x)$?
- Find the x - and y -intercepts explicitly. (Do not use a calculator.)
- Graph $f(x)$.
- What is the range of $f(x)$?