

1. Given that 4 is a root of  $f(x) = x^3 + 3x^2 - 18x - 40$ , what are the other roots?

2. Find all the holes and asymptotes of the graph of

$$g(x) = \frac{x^2 - 8x + 16}{x^3 + 3x^2 - 18x - 40}.$$

3. Find the difference quotient for  $x^2 + 3x + 1$ .