

MCS 107 MT1 Questions

1) Find the solution set of the following inequalities;

a) $\frac{x^2 - 2x - 3}{x + 5} \leq 0$ b) $|3x - 2| + x < \frac{5}{2}$

2) Find the domains of

a) $f(x) = \frac{\sqrt{x} + 2}{x^2 - x - 6}$ b) $f(x) = \log_3(x^2 - 9)$

3) Consider the function $y = -x^2 - 4x - 1$.

a) Write this in the perfect square form (vertex form),

b) Find x -intercept(s) and y -intercept(s),

c) Find $Dom f$ and $Range f$

c) Sketch the graph

4) Find the equation of the line

a) passing through the points $(1, -2)$ and $(-1, 0)$

b) passing through the point $(3, 2)$ and parallel to the line $3x - y = 3$

c) passing through the point $(1, 2)$ and perpendicular to the line $2y - 5x - 4 = 0$

5) Solve;

a) $\ln(x - 3) + \ln(x - 2) = \ln(2x + 24)$

b) $\log_5 125(x^2 + 1) = 3 + \frac{1}{2} \cdot \log_2 4 \cdot \log_5(x + 7)$

6) How much should you invest now at 8% to have \$10000 after 3 years if interest is compounded semi-annually?

Find the value of $\log P$, if $\log 2 \cong 0.3$ and $\log 13 \cong 1.11$.