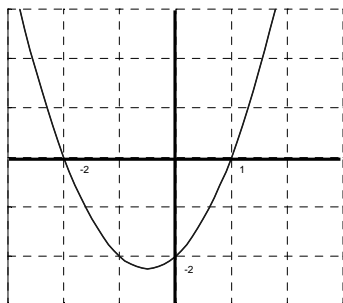


MAT-123 QUIZ #1

Name:

1. Draw the graph of $y = x^2 + x - 2$. What are the x and y intercepts?



x-intercepts : 1 and -2 . y-intercept : -2 .

2. Solve the inequality $x^2 + x - 2 \geq 0$.

$$(x-1)(x+2) \geq 0$$

Answer: $x \leq -2$ or $1 \leq x$

3. What is the domain of each function below?

<p>a) $f(x) = \sqrt{x^2 + x - 2} + 1$</p> <p>Any thing inside the $\sqrt{\quad}$ must be nonnegative. So we have inequality</p> $x^2 + x - 2 \geq 0$ <p>This is same as in problem 2, so the domain is</p> $D = \{x x \leq -2 \text{ or } 1 \leq x\}$ $= (-\infty, -2] \cup [1, \infty)$	<p>b) $g(x) = \frac{2x}{\sqrt{x^2 + x - 2}}$</p> <p>Now the $\sqrt{\quad}$ is also a denominator so it has to be nonzero also.</p> $x^2 + x - 2 > 0$ <p>Solution is almost same as 2, except that \leq is replaced by $<$.</p> $D = \{x x < -2 \text{ or } 1 < x\}$ $= (-\infty, -2) \cup (1, \infty)$	<p>c) $h(x) = \frac{1}{(x^2 + x - 2)x}$</p> <p>Denominator cannot be zero. So we must find out when the denominator is zero.</p> $(x^2 + x - 2)x = 0.$ <p>This is zero when $x = 0$ or $x^2 + x - 2 = 0$. The latter one is factored as $(x-1)(x+2)$ so it is zero when $x = 1$ or $x = -2$. So $-2, 0, 1$ are the ones to avoid.</p> $D = \mathbb{R} \setminus \{-2, 0, 1\}$
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