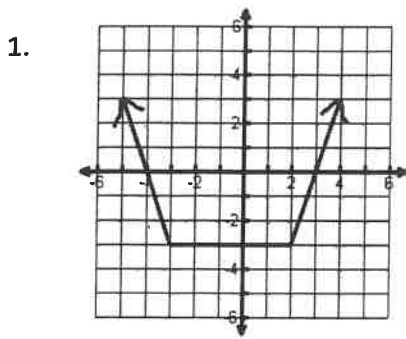
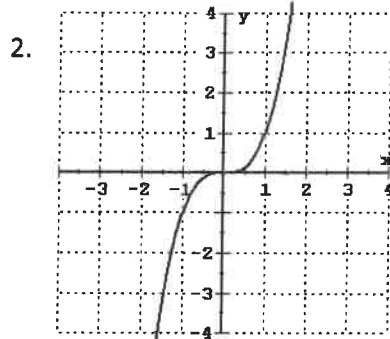


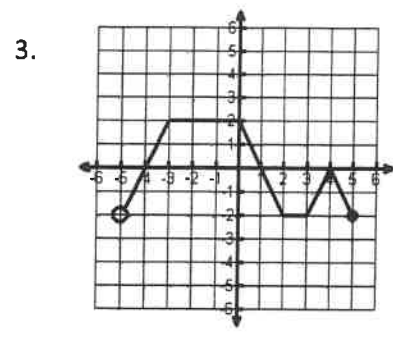
I. From the given graph, state the domain, range, where the graph is increasing and decreasing in interval notation. Be careful with parentheses versus brackets!



Domain: $(-\infty, \infty)$
 Range: $[-3, \infty)$
 Increasing: $(2, \infty)$
 Decreasing: $(-\infty, -3)$
 Constant: $(-3, 2)$



Domain: $(-\infty, \infty)$
 Range: $(-\infty, \infty)$
 Increasing: $(-\infty, \infty)$
 Decreasing: none
 Constant: none



Domain: $(-5, 5]$
 Range: $[-2, 2]$
 Increasing: $(-5, -3) \cup (3, 4)$
 Decreasing: $(0, 2) \cup (4, 5)$
 Constant: $(-3, 0) \cup (2, 3)$

II. State the domain, in interval notation, for the following functions.

5. $f(x) = 8x - 3$
 $(-\infty, \infty)$

6. $f(x) = \frac{x}{5x-10}$
 $5x-10 \neq 0$
 $5x \neq 10$
 $x \neq 2$
 $(-\infty, 2) \cup (2, \infty)$

7. $f(x) = \sqrt{1-4x}$
 $1-4x \geq 0$
 $-4x \geq -1$
 $x \leq 1/4$
 $(-\infty, 1/4]$

8. $f(x) = \frac{x}{x^2-8x+15}$
 $(x-5)(x-3) \neq 0$
 $x \neq 5, x \neq 3$
 $(-\infty, 3) \cup (3, 5) \cup (5, \infty)$

9. $f(x) = \frac{7}{\sqrt{3x-15}}$
 $3x-15 \neq 0$
 $3x \neq 15$
 $x \neq 5$
 $3x-15 \geq 0$
 $3x \geq 15$
 $x \geq 5$
 $(5, \infty)$

10. $f(x) = x^2 - 16$
 $(-\infty, \infty)$

III. Evaluate the following functions.

11. If $f(x) = -2x + 7$, find:

a) $f(-3) = \underline{13}$
 $-2(-3) + 7$
 $6 + 7$
 13

b) $f(4) = \underline{-1}$
 $-2(4) + 7$
 $-8 + 7$
 -1

c) $f(3a) = \underline{-6a + 7}$
 $-2(3a) + 7$
 $-6a + 7$

d) $f(a+h) = \underline{-2a-2h+7}$
 $-2(a+h) + 7$
 $-2a - 2h + 7$

12. For the function $f(x) = 7x + 5$, find $\frac{f(a+h) - f(a)}{h}; h \neq 0$.

$$= \frac{7(a+h) + 5 - (7a + 5)}{h} = \frac{7a + 7b + 5 - 7a - 5}{h} = \frac{7b}{h} = \underline{7}$$