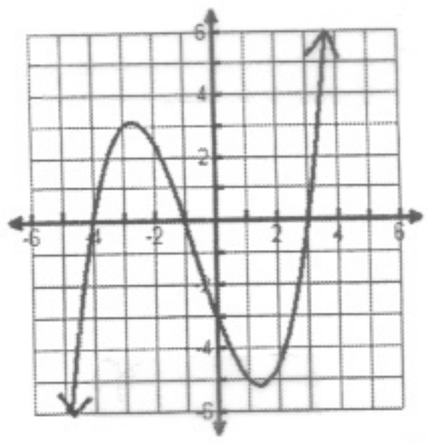
(2A) Station Check

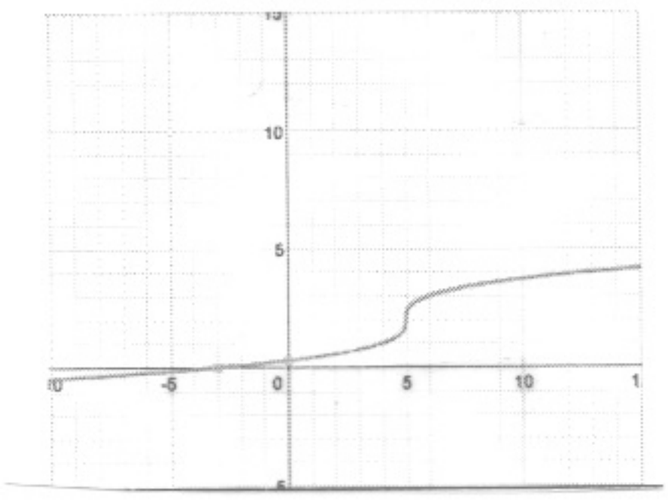


Cubic Function

Domain : $\mathbb{R}$
Range : $\mathbb{R}$

no max or min
x-int $(-4,0)$, $(-1,0)$, $(3,0)$
y-int $(0,-3)$

R.E.B. $x \to \infty$ $y \to \infty$
L.E.B. $x \to -\infty$ $y \to -\infty$



cube root

Domain : $\mathbb{R}$
Range : $\mathbb{R}$ but very slowly

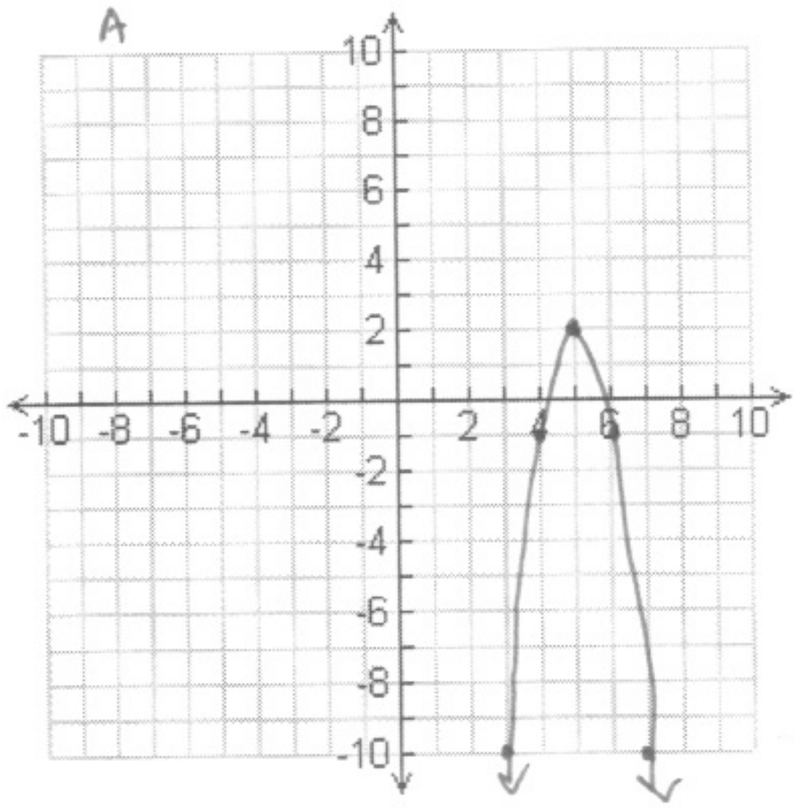
no max or min
x-int $(-3,0)$
y-int $\approx (0, 0.25)$
R.E.B $x \to \infty$ $y \to \infty$
L.E.B. $x \to -\infty$ $y \to -\infty$

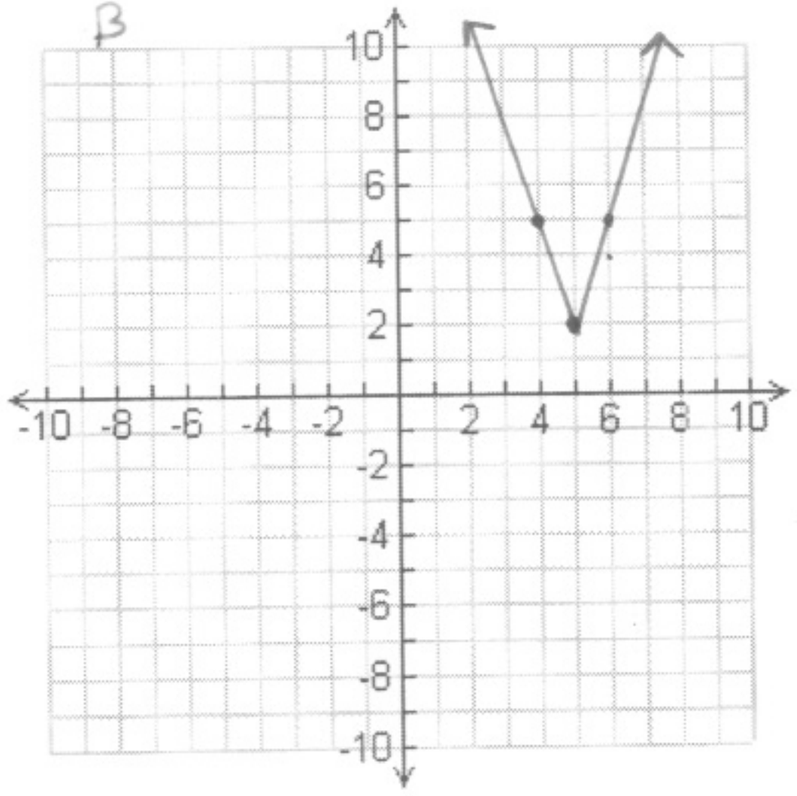
(2B)

Compare and contrast the following functions (use whatever tool you want to graph each function)

Function A
$f(x) = -3(x-5)^2 + 2$

Function B
$h(x) = 3|x-5| + 2$





Both are Functions ——→ V.L.T (vertical line test)
Function A has a max at (5,2) whereas B has a min at (5,2)

Function A & B have domains of all real #'s
However the range for A is $(-\infty, 2]$
and the range for B is $[2, \infty)$

Function A is a quadratic and B is an absolute value

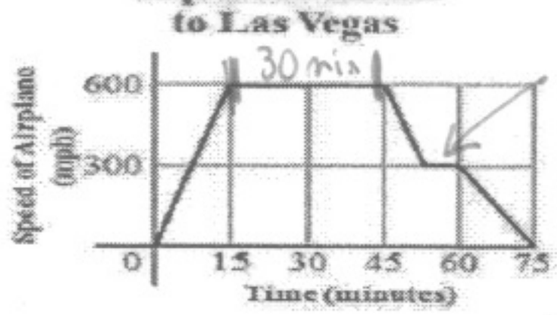
x & y intercepts
Function A has x intercepts ($y=0$) at $x \approx 4.2$ $y=0$; $x \approx 5.8$ $y=0$
y intercept ($x=0$) at $x=0$, $y \approx -73$

Function B has no x-int ($y=0$)
y-int ($x=0$) $3|0-5|+2$
$3(5)+2 = 17$
$x=0$, $y=17$

End behavior
A $x \to \infty$ $y \to -\infty$; $x \to -\infty$ $y \to -\infty$
B $x \to \infty$ $y \to \infty$; $x \to -\infty$ $y \to \infty$

2B

The graph shows the speed of an airplane during a trip from Tucson to Las Vegas.
Which situation is best represented by the graph?



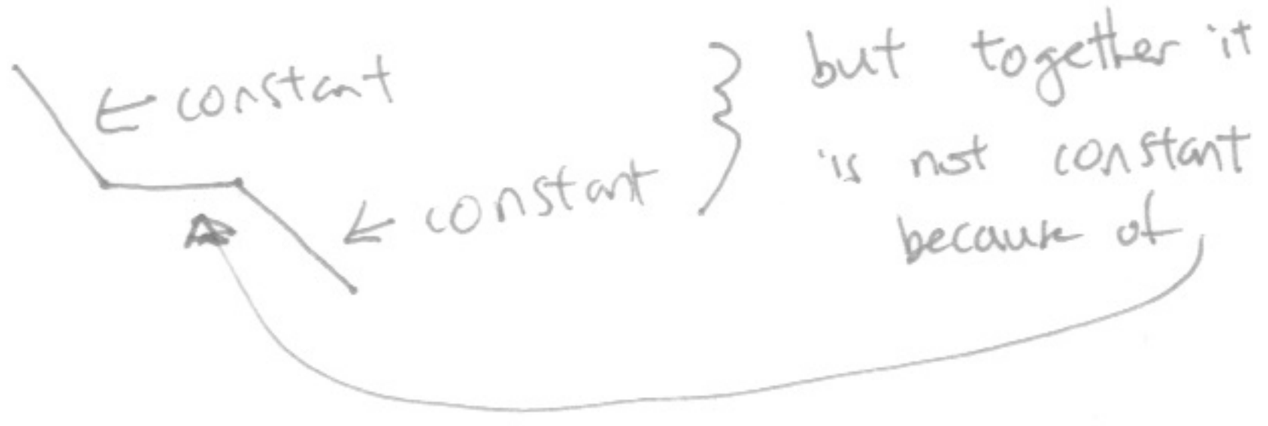
A. An airplane took off and increased speed steadily for 15 minutes. For 30 minutes, the plane flew at 600 mph. The airplane then steadily decreased speed until it landed 20 minutes later.

B. An airplane took off and increased speed steadily for 15 minutes. For 30 minutes, the plane flew at 600 mph. The airplane began to slow down steadily until its speed was 300 mph. The airplane circled the airport for about 7 minutes, and then slowed down steadily until it landed 15 minutes later.

C. An airplane took off and increased speed steadily for 15 minutes. For 30 minutes, the plane flew at 600 mph. The airplane began to slow down steadily until the speed was 100 mph. The airplane circled the airport for about 10 minutes, and then slowed down steadily until it landed 15 minutes later.

D. An airplane took off and increased speed steadily for 15 minutes. For 45 minutes, the plane flew at 600 mph. The airplane began to slow down steadily until the speed was 300 mph. The airplane circled the airport for about 7 minutes, and then slowed down steadily until it landed 75 minutes later.

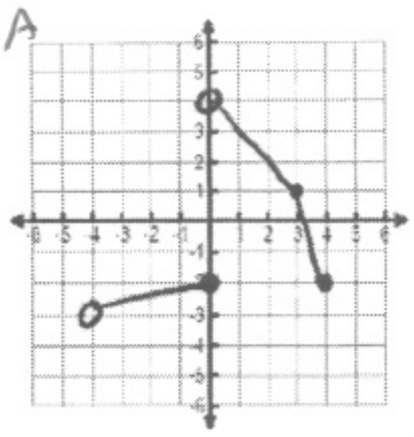
Steady speed means constant increase = linear



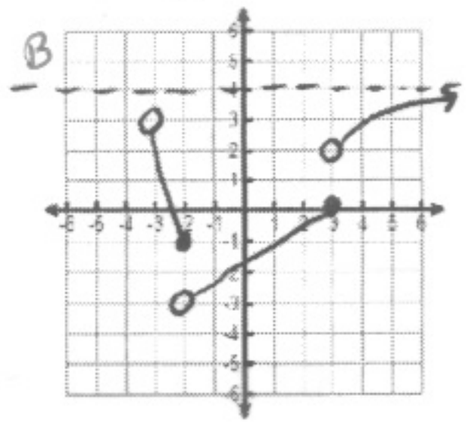
2C

Write the domain and range of each function below

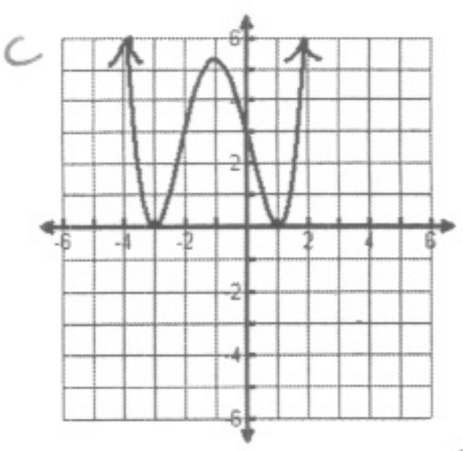
A



B



C



A) Domain $(-4, 4]$ "(" are used because of open dots
Range $(-3, 4)$

B) Domain $(-3, \infty)$ ∞ because of arrow on right side
Range $(-3, 4)$ ← ")" because it get close to $y=4$ but never touches it (asymptote)

C) Domain $(-\infty, \infty)$
Range $[0, \infty)$