Calculus : Derivative Applications Name _____

Group Work – Curve Sketching Date _____ Period _____

Draw a possible graph of $f(x)$ given the information below.

1.

a. $f(x)$ is continuous

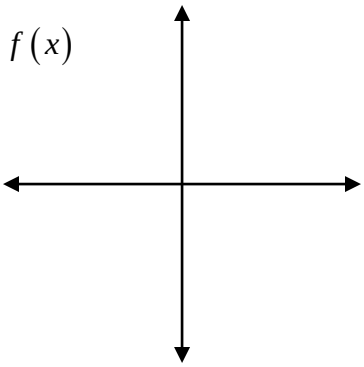
b. $f'(2)=0$

c. $f'(x)>0,$ if $x<2$

d. $f'(x)<0,$ if $x>2$

e. $f''(x)<0$ from $(-\infty,\infty)$

$f(x)$ $f'(x)$ $f''(x)$



2.

a. $f(x)$ is continuous

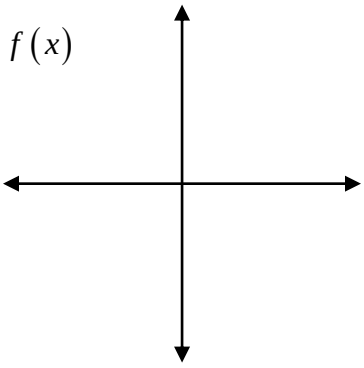
b. $f'(x)$ does not exist at $x=1$

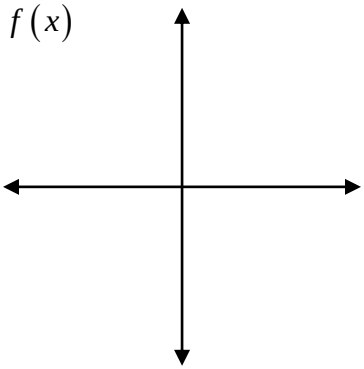
c. $f''(x)<0$ when $x<1$

d. $f''(x)>0$ when $x>1$

Draw <u>two</u> possibilities.

$f(x)$ $f'(x)$ $f''(x)$





3.

a. $f(x)$ is continuous

b. $f'(x)<0$ when $x<1$

c. $f'(x)>0$ when $x>1$

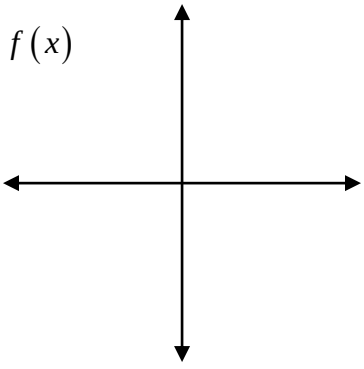
d. $f''(x)>0$ when $x<1$

e. $f''(x)<0$ when $x>1$

f. $f'(x)$ does not exist at $x=1$

g. $f''(x)$ does not exist at $x=1$

$f(x)$ $f'(x)$ $f''(x)$



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4.

a. $f(x)$ is continuous

b. $f'(x) < 0$ on $(-1, 4)$

c. $f'(x) > 0$ on $(-\infty, -1) \cup (4, \infty)$

d. $f'(x) = 0$ when $x = -1,\ x = 4$

e. $f'' < 0$ on $(-\infty, 1.5)$

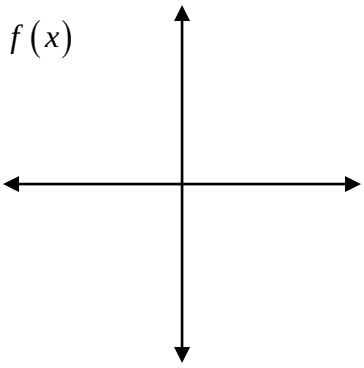
f. $f'' > 0$ on $(1.5, \infty)$

$f(x)$

$f'(x)$ ⟷

$f''(x)$ ⟷

$f(x)$



5.

a. $f(x)$ is continuous

b. $f'(x) > 0$ everywhere

c. $f'(x) = 0$ when $x = -2,\ x = 3$

d. $f''(x) < 0$ on $(-\infty, -2) \cup (1, 3)$

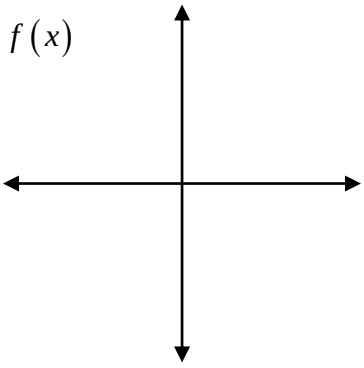
e. $f''(x) > 0$ on $(-2, 1) \cup (3, \infty)$

$f(x)$

$f'(x)$ ⟷

$f''(x)$ ⟷

$f(x)$



6.

a. $f(x)$ is continuous

b. $f'(x) > 0$ when $x < 2$

c. $f'(x) < 0$ when $x > 2$

d. $f'(x)$ does not exist at $x = 2$

e. $f''(x) > 0$ when $x < 2$

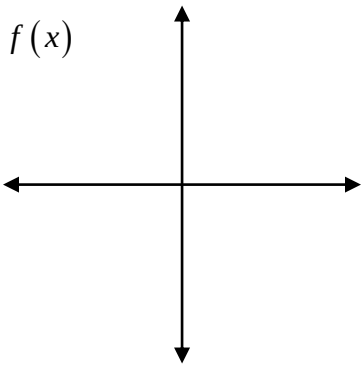
f. $f''(x) < 0$ when $x > 2$

$f(x)$

$f'(x)$ ⟷

$f''(x)$ ⟷

$f(x)$



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7.

a. $f(x)$ is not continuous at $x=3$

b. $f'(x)>0$ when $x<3$

c. $f'(x)<0$ when $x>3$

d. $f''(x)>0$ when $x<3$

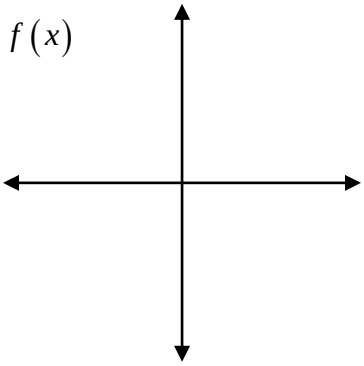
e. $f''(x)>0$ when $x>3$

f. $f'(x)$ does not exist at $x=3$

$f(x)$

$f'(x)$

$f''(x)$



8.

a. $f(x)$ is not continuous at $x=0$

b. $f'(x)$ does not exist at $x=0$

c. $f'(x)>0$ when $x<0$

d. $f'(x)>0$ when $x>0$

e. $f''(x)$ does not exist at $x=0$

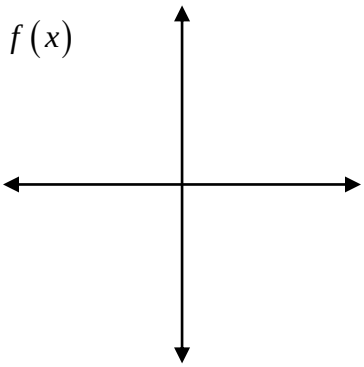
f. $f''(x)>0$ when $x<0$

g. $f''(x)<0$ when $x>0$

$f(x)$

$f'(x)$

$f''(x)$



9.

a. $f(x)$ is continuous

b. $f(3)=0,\ f(1)=-2,$
$f(0)=-1,\ f(-1)=0$

c. $f'(x)>0$ when $1<x<3$

d. $f'(x)<0$ when $x>3$ or $x<1$

e. $f''(x)>0$ when $x<0$ or $1<x<3$

f. $f''(x)<0$ when $0<x<1$ or $x>3$

$f(x)$

$f'(x)$

$f''(x)$