Unit 5 Practice #5

(1) Find the rate of change of each function over the given interval.

A) $y = x^2 - 6x + 8$, $-5 \leq x \leq -2$

B) $y = -(x+8)(x-6)$, $3 \leq x \leq 4$

C) $y = 2(x+5)^2 - 12$, $0 \leq x \leq 3$

D) $y = 5x^2 - 4$, $-2 \leq x \leq -1$

(2) Find the solutions.

A) $y = -3(x-1)(x+2)$

B) $y = x^2 + 5x - 3$

C) $y = 2x^2 + 2x - 12$

D) $y = 2(x-2)^2 - 2$

(3) use the table to find the characteristics.

x	-3	-2	-1	0	1	2	3
y	0	5	8	9	8	5	0

vertex: ____ x-int: ____

AoS: ____ zeros: ____

extrema: ____ RoC, $0 \leq x \leq 2$: ____

y-int: ____

Unit 5 Practice #5

(1) Find the rate of change of each function over the given interval. $\frac{f(b)-f(a)}{b-a}$

A) $y=x^2-6x+8$, $-5\le x\le -2$

$a=-5$ $f(a)=63$ $\quad \frac{24-63}{-2-(-5)}=\frac{-39}{3}=\boxed{-13}$

$b=-2$ $f(b)=24$

B) $y=-(x+8)(x-6)$, $3\le x\le 4$

$a=3$ $f(a)=33$ $\quad \frac{24-33}{4-3}=\frac{-9}{1}=\boxed{-9}$

$b=4$ $f(b)=24$

C) $y=2(x+5)^2-12$, $0\le x\le 3$

$a=0$ $f(a)=38$ $\quad \frac{116-38}{3-0}=\frac{78}{3}=\boxed{26}$

$b=3$ $f(b)=116$

D) $y=5x^2-4$, $-2\le x\le -1$

$a=-2$ $f(a)=16$ $\quad \frac{1-16}{-1-(-2)}=\frac{-15}{1}=\boxed{-15}$

$b=-1$ $f(b)=1$

(2) Find the solutions.

A) $y=-3(x-1)(x+2)$

$x-1=0$ $\quad x+2=0$

$+1\ +1$

$\boxed{x=1}$ $\quad \boxed{x=-2}$

B) $y=x^2+5x-3$

$x=\frac{-5\pm\sqrt{5^2-4(1)(-3)}}{2(1)}=\frac{-5\pm\sqrt{25+12}}{2}$

$x=\boxed{\frac{-5\pm\sqrt{37}}{2}}$

C) $y=2x^2+2x-12$

$-4\cdot 6=-24$

$-4+6=2$

$2x^2-4x+6x-12$

	x	-2
$2x$	$2x^2$	$-4x$
6	$6x$	-12

$y=(2x+6)(x-2)$

$2x+6=0$ $\quad x-2=0$

$\boxed{x=-3}$ $\quad \boxed{x=2}$

D) $y=2(x-2)^2-2$

$0=2(x-2)^2-2$

$+2\qquad +2$

$\frac{2}{2}=\frac{2(x-2)^2}{2}$

$1=(x-2)^2$

$\sqrt{1}=\sqrt{(x-2)^2}$

$\pm 1=x-2$

$+2\qquad +2$

$2\pm 1=x$

$\boxed{x=3}$ $\quad \boxed{x=1}$

(3) use the table to find the characteristics.

x	-3	-2	-1	0	1	2	3
y	0	5	8	9	8	5	0

vertex: $(0,9)$

AOS: $x=0$

extrema: max at 9

y-int: $(0,9)$

x-int: $(-3,0),(3,0)$

zeros: $-3,3$

ROC, $0\le x\le 2$: $\frac{5-9}{2-0}=\frac{-4}{2}=\boxed{-2}$

$a=0$ $f(a)=9$

$b=2$ $f(b)=5$