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CC Algebra 2

Module 1 Regents Review

REGENTS SAMPLER QUESTIONS

Solve algebraically for all values of x:

$$\sqrt{x-5}+x=7$$

$(\sqrt{x-5})^2=(7-x)^2$

$x-5=49-14x+x^2$

$0=x^2-15x+54$

$0=(x-6)(x-9)$

$x=6$ | $x\neq 9$ reject

Algebraically determine the values of x that satisfy the system of equations below.

$$y=-2x+1$$
$$y=-2x^2+3x+1$$

$-2x+1=-2x^2+3x+1$

$2x^2-5x=0$

$x(2x-5)=0$

$x=0$ | $x=5/2$

$x=\{0, 5/2\}$

The solutions to the equation $-\frac{1}{2}x^2=-6x+20$ are

(1) $-6\pm 2i$

(2) $-6\pm 2\sqrt{19}$

3 (3) $6\pm 2i$

(4) $6\pm 2\sqrt{19}$

$0=\frac{1}{2}x^2-6x+20$

$0=x^2-12x+40$

$+36 \quad -40=x^2-12x \quad +36$

$-4=(x-6)^2$

$\pm 2i=x-6$

$x=6\pm 2i$

What is the completely factored form of $k^4 - 4k^2 + 8k^3 - 32k + 12k^2 - 48$?

(1) $(k-2)(k-2)(k+3)(k+4)$

(2) $(k-2)(k-2)(k+6)(k+2)$

(3) $(k+2)(k-2)(k+3)(k+4)$

(4) $(k+2)(k-2)(k+6)(k+2)$

$k^2(k^2-4)+8k(k^2-4)+12(k^2-4)$

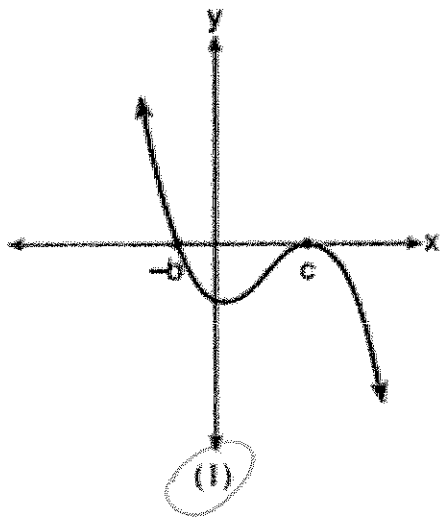
$(k^2-4)(k^2+8k+12)$

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

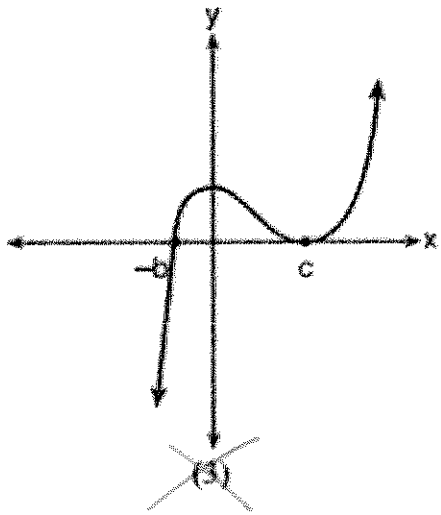
If a, b, and c are all positive real numbers, which graph could represent the sketch of the graph of $p(x) = -a(x+b)(x^2-2cx+c^2)$?

$x=-b$ $(x-c)^2$ $x=c$ $x=c$

end behavior



(1)



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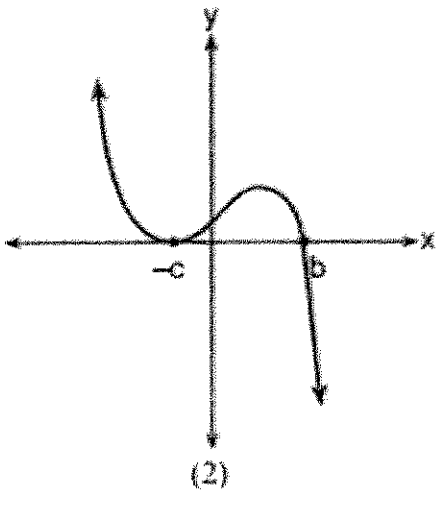

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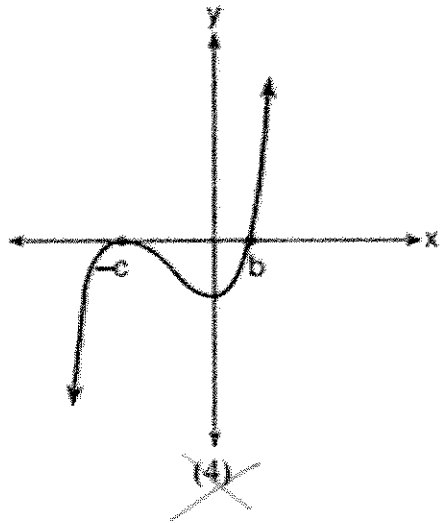


(4)

The expression $\dfrac{6x^3+17x^2+10x+2}{2x+3}$ equals

(1) $3x^2+4x-1+\dfrac{5}{2x+3}$

(2) $6x^2+8x-2+\dfrac{5}{2x+3}$

(3) $6x^2-x+13-\dfrac{37}{2x+3}$

(4) $3x^2+13x+\dfrac{49}{2}+\dfrac{151}{2x+3}$

	$3x^2$	$+4x$	-1	
$2x$	$6x^3$	$+8x^2$	$-2x$	$+5$
$+3$	$+9x^2$	$+12x$	-3	

Use an appropriate procedure to show that $x-4$ is a factor of the function $f(x)=2x^3-5x^2-11x-4$. Explain your answer.

	$2x^2$	$+3x$	$+1$
x	$2x^3$	$+3x^2$	$+11x$
-4	$-8x^2$	$-12x$	-4

No remainder, so $x-4$ is a factor

OR

$(x-4)$ is a factor iff $f(4)=0$

$f(4)=2(4)^3-5(4)^2-11(4)-4$

$=128-80-44-4$

$=128-124-4$

0

Given $z(x)=6x^3+bx^2-52x+15$, $z(2)=35$, and $z(-5)=0$, algebraically determine all the zeros of $z(x)$.

$z(2)=35$

$6(2)^3+b(2)^2-52(2)+15=35$

$48+4b-104+15=35$

$4b-41=35$

$\dfrac{4b}{4}=\dfrac{76}{4}$

$b=19$

$z(x)=6x^3+19x^2-52x+15$

$(x+5)(6x^2-11x+3)$

	$6x^2$	$-11x$	$+3$
x	$6x^3$	$-11x^2$	$+3x$
$+5$	$+30x^2$	$-55x$	$+15$

$0=(x+5)(6x^2-11x+3)$ $\quad ac=18$

$0=(x+5)(3x-1)(2x-3)$

$x=-5 \quad x=\frac{1}{3} \quad x=\frac{3}{2}$

$6x^2-9x-2x+3$

$3x(2x-3)-1(2x-3)$

Green Review Book Questions – Test 6

#5 Factor of $(x+2)$

$f(-2)=0$

~~$-8-16-5$~~ ~~$-16-4-4-3$~~

$-8-8+3$ $-16+4+8+4$

#6

Make a table on the calc!

$n(t) = 300$

t	n(t)
8	295.617
9	332.387

(1) During 2008

#10

$-4\sqrt{-48}$

$-4i\sqrt{16}\sqrt{3}$

$-16i\sqrt{3}$

(4)

#16

$i = \sqrt{-1}$

$i^2 = -1$

$E = I \cdot Z$

$E = (4+8i)(2-3i)$

$8 - 12i + 16i - 24i^2$

$8 + 4i + 24 = 32 + 4i$ (1)

#17

$0 = 2(x+6)(x-3)(x-3)(x+4)$

$x=-6 \quad x=3 \quad x=3 \quad x=-4$

mult of 2

(1)

#21

$\sqrt{4-2y-y^2} - 2 = y$

$(\sqrt{4-2y-y^2})^2 = (y+2)^2$

$4-2y-y^2 = y^2+4y+4$

$0 = 2y^2+6y$

$2y(y+3)=0$

$y=0 \quad y=-3$

Reject

(3)

#26

zeros: $3, 1, -2$

y-int: $(0,6)$

$f(x) = a(x-3)(x-1)(x+2)$

$6 = a(-3)(-1)(2)$

$6 = 6a$

$1 = a$

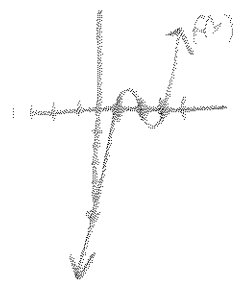
$f(x) = (x-3)(x-1)(x+2)$

$f(x) = x^3 - 2x^2 - 5x + 6$

#27

$f(x) = x^3 - 6x^2 + 11x - 6$

$f(x) = (x-1)(x-2)(x-3)$



#33

$x^3 - 6x^2 - 4x + 24$

$x^2(x-6) - 4(x-6)$

$(x^2-4)(x-6)$

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

$x^3 - 6x^2 - 4x + 24 = 0$

$(x+2)(x-2)(x-6) = 0$

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

The zeros of the factors are the solutions.

zeros of $f(x) = x^3 - 6x^2 - 4x + 24$ are the x-intercepts because we're solving y equals zero