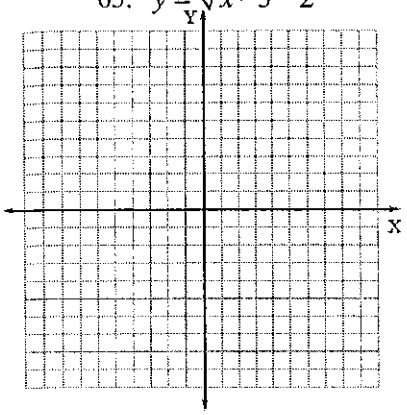
Midterm Review Worksheet #2
(answers online)

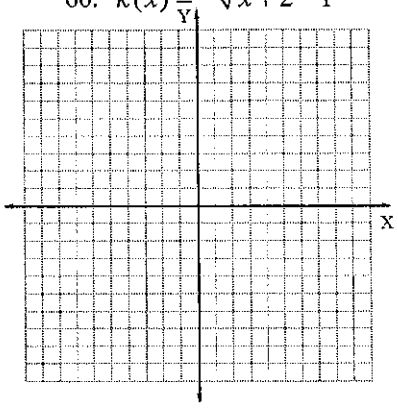
65. $y = \sqrt[3]{x-3} - 2$



D:_____

R:_____

66. $k(x) = -\sqrt{x+2} - 1$



D:_____

R:_____

67. List all possible real roots for the function $f(x) = -4x^3 - 7x^2 + 4x - 3$

68. Find all factors of the polynomial function $f(x) = x^3 + 3x^2 - 10x - 24$.

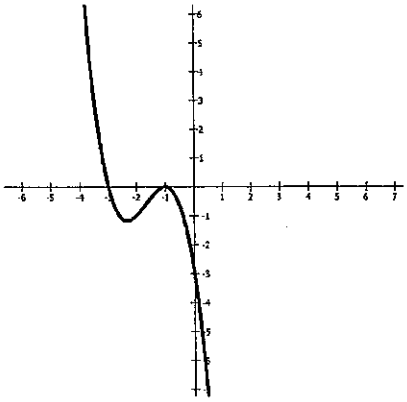
69. What is the quotient of $(2x^3 - 3x^2 + 4x - 1) \div (x - 3)$?

70. What is the quotient when $5x^4 + 10x^3 - 16x^2 + 31x - 7$ is divided by $5x^2 - 1$?

71. State the end behavior for the function $g(x) = -4x^7 + 6x^4 + 3x^2 - 2x + 10$

72. Write the equation of the function graphed. Put your answer in standard form.

$g(x) = -2x^4 + 3x^2 - 7$



73. Find all zeros for the function $f(x) = x^3 + 3x^2 + 7x + 5$.

74. Find the remainder for $\left(x^3 - 8x^2 + 7\right) \div (x - 3)$

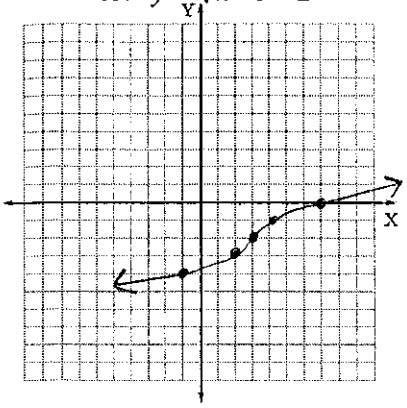
75. A diver jumps off a platform 25 feet up from the water level with an initial velocity of 20 feet per second. Answer the following and round all answers to three decimal places.

    a) What is the maximum height the diver reaches during her flight?

    b) When will the diver enter the water? Explain how you determined your answer.

Midterm Review Worksheet #2 (answers online) key

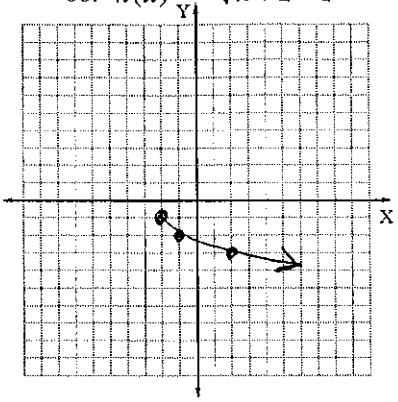
65. $y = \sqrt[3]{x-3} - 2$



D: $(-\infty, \infty)$

R: $(-\infty, \infty)$

66. $k(x) = -\sqrt{x+2} - 1$



D: $[-2, \infty)$

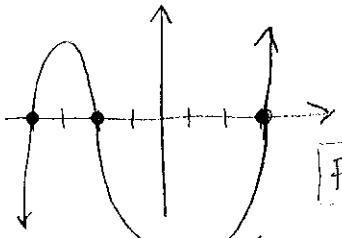
R: $[-1, -\infty)$

67. List all possible real roots for the function $f(x) = -4x^3 - 7x^2 + 4x - 3$

-2.32 | calculator

68. Find all factors of the polynomial function $f(x) = x^3 + 3x^2 - 10x - 24$.

$x^2(x+3) - 2(5x+12)$ uh oh! can't factor it then graph



$x = -4, -2, 3$

Factors: $(x+4)(x+2)(x-3)$

69. What is the quotient of $(2x^3 - 3x^2 + 4x - 1) \div (x-3)$?

	3	2	1	0
3	2	-3	4	-1
	↓	6	9	39
	2	3	13	38

$2x^2 + 3x + 13 + \frac{38}{x-3}$

Challenge

70. What is the quotient when $5x^4 + 10x^3 - 16x^2 + 31x - 7$ is divided by $5x^2 - 1$?

no ox!

$x^2 + 2x + 3$

$5x^2 - 1 \overline{)5x^4 + 10x^3 - 16x^2 + 31x - 7}$

$-5x^4 \quad +x^2$

$10x^3 - 15x^2 + 31x$

$-10x^3 \quad +2x$

$-15x^2 + 33x - 7$

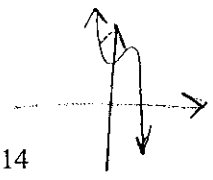
$-15x^2 \quad +3$

$33x - 4$

$x^2 + 2x + 3 + \frac{33x-4}{5x^2-1}$

71. State the end behavior for the function $g(x) = -4x^7 + 6x^4 + 3x^2 - 2x + 10$

odd - losing it



up, down

72. Write the equation of the function graphed. Put your answer in standard form.

[redacted]

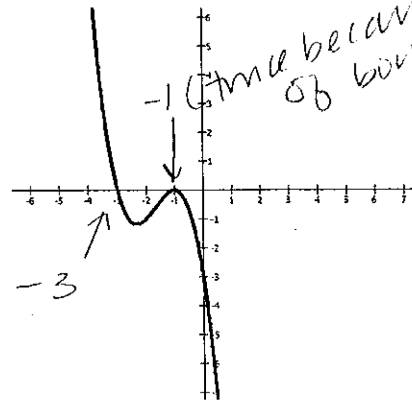
$-3 \quad -1 \quad -1$

$(x+3)(x+1)(x+1)$

$(x+3)(x^2+2x+1)$

$x^3+2x^2+x+3x^2+6x+3$

$\boxed{x^3+5x^2+7x+3}$



-1 (twice because of bounce)

-3

73. Find all zeros for the function $f(x)=x^3+3x^2+7x+5$.

-1

$$\begin{array}{r|rrrr} -1 & 1 & 3 & 7 & 5 \\ & \downarrow & -1 & -2 & -5 \\ \hline & 1^2 & 2^1 & 5^0 & (0) \end{array}$$

x^2+2x+5

$= \dfrac{-2 \pm \sqrt{(2)^2-4(1)(5)}}{2(1)}$

$= \dfrac{-2 \pm \sqrt{4-20}}{2} = \dfrac{-2 \pm \sqrt{-16}}{2}$

$= \dfrac{-2 \pm 4i}{2}$ $\boxed{-1 \pm 2i \quad -1}$

74. Find the remainder for $\left(x^3-8x^2+7\right)\div(x-3)$

3 remainder theorem

$(3)^3-8(3)^2+7$

$27-8(9)+7 = 27-72+7 = \boxed{-38}$

75. A diver jumps off a platform 25 feet up from the water level with an initial velocity of 20 feet per second. Answer the following and round all answers to three decimal places.

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b) When will the diver enter the water? Explain how you determined your answer.