KEY

Review Team Pass Card

11.1– Statistical Questions and Vocabulary

1. Determine whether the numerical value is a parameter of a statistic. Explain.

The average late fee for 360 credit card holders was found to be $56.75.

Statistic because the average was found of a sample

11.3 – Data Distribution

2. Given the data set, find the mean, median and IQR.

12, 2, 14, 8, 7, 5, 6, 8, 4, 10

2, 4, 5, 6, 7, 8, 8, 10, 12, 14 (7.5)

Mean: 7.6 Median: 7.5 IQR: 10 - 5 = 5

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The mean on the Algebra 2 midterm last year was a 78 with a standard deviation of 7. Assuming the scores were distributed normally, answer the following questions.

11.4 – Normal Distribution

3. Percent of students that scored between a 71 and 92 on the test.

81.5%.

4. Percent that scored above a ~~99~~ 99 on the test.

0.15%.

11.5 – Margin of Error

4. I-Vision surveyed 20 students and found that they averaged at 72 on the midterm.

a) What is the margin of error? $MOE = \frac{\pm 2(7)}{\sqrt{20}} = \pm 3.130$

b) Find the range of reasonable means for the sample size.

$78 \pm 3.13 =$ 81.13, 74.87

The range of reasonable means is 74.87 ε 81.13

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5.1/5.2 – Radicals and Rational Exponents

5. Simplify the expressions:

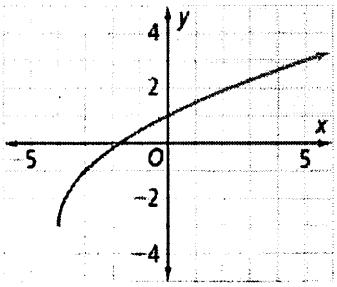
a) $\sqrt[3]{\frac{32x^5y}{2x^2y^{-5}}} = 3\sqrt{16x^3y^6} = 2xy^2\sqrt[3]{2}$

b) $\left(\frac{64x^6y^{2/3}}{4x^8(xy^2)^{-2}}\right)^{3/2} = \left(\frac{16x^2y^4y^{2/3}}{x^2}\right)^{3/2}$

$= 64y^7$

5.3 – Radical Functions

6. Given the transformed function g(x), write the equation for the function and find the following features.



Equation: $g(x) = 2\sqrt{x+4} - 3$

Domain: $x \in [-4, \infty)$ **Range:** $y \in [-3, \infty)$

Interval over which g(x) is increasing: $x \in (-4, \infty)$

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5.4 – Solving Radical Functions

7. Solve for x (remember to check for extraneous solutions). $4 + \sqrt{x+2} = x$

$\sqrt{x+2} = x-4$

$x+2 = x^2-8x+16$

$0 = x^2-9x+14$

$0 = (x-7)(x-2)$

$x = 2$, $\boxed{x=7}$

$x=2$ ↑ extraneous

5.5 – Function Operations and Compositions

8. Given the functions $f(x) = x^2 - 3x - 18$ and $g(x) = x+3$, find the following (be sure to state the domain):

a) $(f \circ g)(x)$

$= (x+3)^2 - 3(x+3) - 18$

$= x^2+6x+9-3x-9-18$

$= x^2+3x-18$

$x \in \mathbb{R}$

b) $\left(\frac{g}{f}\right)(x) = \frac{x+3}{x^2-3x-18} = \frac{x+3}{(x-6)(x+3)}$

$= \frac{1}{x-6}$

$x \in \mathbb{R}, x \neq 6, -3$

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5.6 – Inverse Functions

9. Find the inverse of $f(x) = 2 \cdot 4^{x+1} - 2$

$f^{-1}(x) = \log_4\left(\frac{x+2}{2}\right) - 1$

6.1 – Exponential Functions

10. Select all that apply for the function: $f(x) = -3^{x-3} + 4$

STATE ALL THAT APPLY.

- **i.** Reflected over the x-axis
- **ii.** Vertical Asymptote at y = 4
- **iii.** Horizontal translation right 3
- **iv.** Domain: $x \in \mathbb{R}$
- **iv.** Reflected over the y-axis
- **v.** Horizontal Asymptote at x = 3
- **vi.** Horizontal translation right 3
- **viii.** Domain: $x \in (4, \infty)$

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6.2 Exponential Models

11. You invest $500 into a savings account that earns 5.2% interest compounded monthly. Write an equation A(t) to model the amount of money in the account t years after you began your investment.

$A(t) = 500\left(1 + \frac{.052}{12}\right)^{12t}$

6.3 Logarithms

12. Solve for *x*:

a) $\log_5(x-2) + 3 = 6$

$\log_5(x-2) = 3$

$x - 2 = 5^3$

$x - 2 = 125$

$x = 127$

b) $4^{3x} = \left(\frac{1}{8}\right)^{x+1}$

$(2^2)^{3x} = (2^{-3})^{x+1}$

$2^{6x} = 2^{-3x-3}$

$6x = -3x - 3$

$9x = -3$

$x = -1/3$

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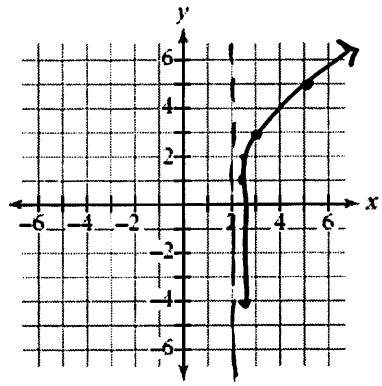
6.4- Logarithmic Functions

13. Graphs the function $m(x) = 2\log_3(x-2)+3$



6.7 – Geometric Sequences

14. Given the sequence, 20, 18, 16.2, 14.58 ...

a) Write an explicit definition to define the series.

$a_n = 20(0.9)^{n-1} \qquad n \geq 1$

b) Find S_{10}

$S_{10} = \frac{20(1-0.9^{10})}{(1-0.9)} \approx 130.264$

c) Find the sum of the series.

$S = \frac{20}{(1-.9)} = 200$