

Name Master G

Test Nav Algebra 2 2016 Answer Sheet



Simplified Expression

1. $(2d+5)^2$
 $4d+1$

2. C

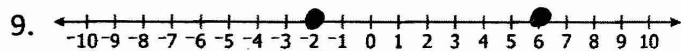
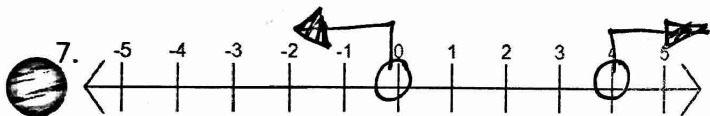
3. D

4.

$\frac{729}{6} q^{\frac{12}{6}} r^{\frac{11}{6}}$	$\frac{729}{6} q^{11} r^5$	$3q^{\frac{12}{6}} r^{\frac{11}{6}}$	$3q^{11} r^5$
$\frac{729}{6} q^{\frac{6}{17}} r^{\frac{11}{17}}$	$\frac{729}{6} q^2 r^{\frac{6}{17} q^5 r^5}$	$3q^{\frac{6}{17}} r^{\frac{6}{17}}$	$3q^2 r^{\frac{6}{17} q^5 r^5}$

5. A

6. B



10. B

11. D

12. C

13.

-0.25	-1	-2	-3.25	-13
0.25	1	2	3.25	13

14. C



15.

$f(x) = \frac{-3}{x^2}$	$f(x) = \frac{3}{x}$	$f(x) = \frac{3}{(x+1)^2}$	$f(x) = \frac{-3}{x+1}$
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16. D

17. B

18. First $f(x)$ was reflected over the x-axis

The result as then horizontal stretch by a factor of 2 & translated up 1 unit

19. B $y = -$

20. $x = -1$

21.

$g(x) = x^2 + 2x - 3$	←
$h(x) = x^3 - 4$	
$j(x) = 2^x - 5$	
$k(x) = \sqrt{x} - 4$	←
$m(x) = (x-4)^2$	←

22. $g(x) = \frac{x^2}{(x+2)^2 + 13}$

← the only one that doesn't have a hole or asymptote!

23.

$-\infty < x < \infty$	
$-\infty < x < -1$	←
$-2.5 < x < \infty$	
$-1 < x < 2$	
$0 < x < \infty$	
$2 < x < \infty$	←

24. -4

25. C

26. $\boxed{2.5}$ or $\frac{5}{2}$

27. C

28. D

29. A

Horizontal Asymptote	Vertical Asymptote
$y=4$	$x=3$

31. C

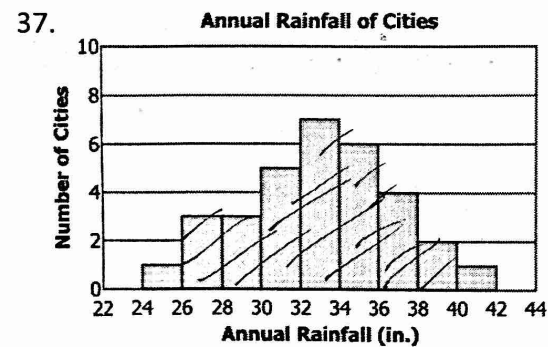
32. $\boxed{13}$

33. A

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

35. B

36. $\boxed{67}$ cm³



38. $\boxed{185}$ Students

39. D

40. B

41. z-score = $\boxed{-1.44}$

42.

Region 1	Region 2	Region 3	Region 4
Region 5	Region 6	Region 7	Region 8

43. $\boxed{63}$ or 5 & 6

44. $\boxed{336}$

$$1. \frac{-2d^2 + d + 15}{9 - d^2} \div \frac{4d + 1}{2d^2 + 11d + 15}$$

$$\frac{(-2d-5)(d+3)}{(3+d)(3-d)} \cdot \frac{(2d+5)(d+3)}{(4d+1)}$$

$$\frac{(2d+5)(2d+5)}{4d+1} = \boxed{\frac{(2d+5)^2}{4d+1}}$$

$$2. \frac{2x}{x^2-49} - \frac{3}{(x-4)(x-7)}$$

$$\frac{2x(x-4)}{(x-4)(x+7)(x-7)} - \frac{3(x+7)}{(x-4)(x+7)(x-7)} = \frac{2x^2 - 8x - 3x - 21}{(x-4)(x+7)(x-7)}$$

$$\frac{2x^2 - 11x - 21}{(x-4)(x+7)(x-7)} = \frac{(2x+3)(x-7)}{(x-4)(x+7)(x-7)} = \boxed{\frac{2x+3}{(x-4)(x+7)}} \text{ (C)}$$

$$3. \frac{-13+d}{42d^3} \cdot \frac{(13+d)}{42d^3} \cdot \frac{6d^9}{(13-d)} = \frac{-6d^9}{6 \cdot 7d^3} = \frac{-d^9}{7d^3} = \boxed{\frac{-d^6}{7}} \text{ (D)}$$

$$4. \sqrt[6]{729q^{17}r^{11}} = 729^{\frac{1}{6}} q^{\frac{17}{6}} r^{\frac{11}{6}} = \boxed{3q^{\frac{17}{6}} r^{\frac{11}{6}}}$$

$$5. \sqrt[3]{576n^8p^{27}} = \sqrt[3]{64 \cdot 9 \cdot n^6 \cdot n^2 \cdot p^{27}} = \boxed{4n^2 p^9 \sqrt[3]{9n^2}} \text{ (A)}$$

$$6. 125m^3 - 343 = (5m)^3 - (7)^3 = \boxed{(5m-7)(25m^2 + 35m + 49)} \text{ (B)}$$

$$* 7. |x-2| > 2 \quad x-2 > 2 \text{ or } x-2 < -2 \quad \boxed{\begin{array}{c} \leftarrow \oplus \oplus \rightarrow \\ 0 \quad 4 \end{array}}$$

$$\boxed{x > 4 \text{ or } x < 0}$$

$$* 8. -3|x-2| + 1 < -5$$

$$-3|x-2| < -6 \quad x-2 > 2 \text{ or } x-2 < -2$$

$$|x-2| > 2 \quad x > 4 \text{ or } x < 0$$

* 9. $|\frac{1}{8}x - \frac{1}{4}| = \frac{1}{2}$ $\frac{1}{8}x - \frac{1}{4} = \frac{1}{2}$ $\frac{1}{8}x - \frac{1}{4} = -\frac{1}{2}$ $\frac{1}{4} - \frac{2}{4}$

$\leftarrow \bullet \text{---} \bullet \rightarrow$ $\frac{1}{8}x = \frac{3}{4} \cdot \frac{8}{1}$ $\frac{1}{8}x = -\frac{1}{4} \cdot \frac{8}{1}$
 $x = 6$ $x = -2$

10. $-16 - 8i\sqrt{35}$ conjugate = $a \pm bi$
 $-16 + 8i\sqrt{35}$ (B)

* 11. $3\sqrt{2x-4} + 6 = 3$
 $3\sqrt{2x-4} = -3$ $\sqrt{2x-4} = -1$ $2x-4 = 1$ $2x = 5$ $x = \frac{5}{2}$
 (D)

* 12. $x^2 + 6x + 3y + 6 = 0$
 $x + y + 20 = 0 \Rightarrow y = -x - 20$
 $x^2 + 6x + 3(-x - 20) + 6 = 0$
 $x^2 + 6x - 3x - 60 + 6 = 0$
 $x^2 + 3x - 54 = 0$
 $(x+9)(x-6) = 0$
 $-9, 6 = x$

13. $5x - 4y - 11 = 0$

$y = x^2 - x - 6$

$5x - 4(x^2 - x - 6) - 11 = 0$

$5x - 4x^2 + 4x + 24 - 11 = 0$

$-4x^2 + 9x + 13 = 0$

$\begin{array}{r|l} -52 & 9 \\ \hline -4 \cdot 13 & \end{array}$

slip slide method

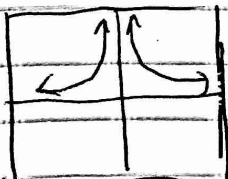
$\therefore y = -x - 20$

$y = 9 - 20 = -11$
 $y = 6 - 20 = -14$ (C)

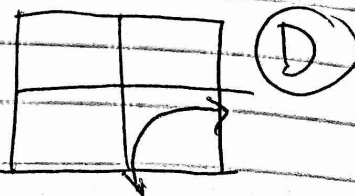
$(x-4)(x+13)$
 $-4 \quad -4$

$(x+1)(-4x+13) = 0$
 $x = -1, \frac{13}{4} = 3.25$

14. $\sum_{n=1}^{\infty} \left(\frac{2}{3}\right)^n$ $\sum_{\infty} = \frac{a_1}{(1-r)}$ $\frac{2}{3} = \frac{2}{3}$ $\frac{2}{1-\frac{2}{3}} = 2$ (C)

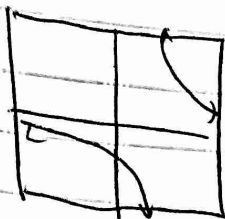
* 15.  $f(x) = \frac{-3}{x^2}$ $f(x) = \frac{-3}{(x+1)^2}$

16. $f(x) = \log(x) + c$ where $c < 0$, which means the graph shifts down.





* 17.



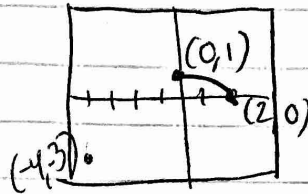
Recip $f(x)$: vertical asympt. at $x=3$
horiz asympt $y=0$

Cross out A & C

(B)
$$\frac{8}{x-3} = f(x)$$

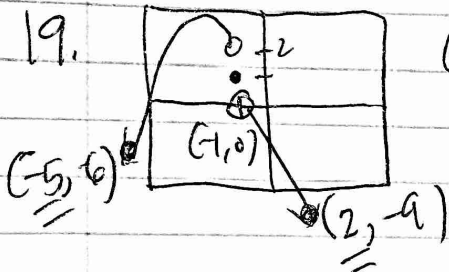
* 18. $f(x) = x^2 \Rightarrow g(x)$
 $f(x)$ was:

(1) Reflected over the x -axis



(2) horizontally stretched by a factor of 2 & translated up 1 unit would be $y = -(2x)^2 + 1$

19.



Control (+) to enlarge

$[-5, 2] \{x | -5 \leq x \leq 2\}$ (B)



* 20. $xy + y - x = 7$
 $xy + y = x + 7$
 $y(x+1) = x+7$
 $y = \frac{x+7}{x+1}$

Det. the value of x that is NOT in the domain of this function

$x \neq -1$

21. $f(x) = |x| - 4 \quad y \geq -4$

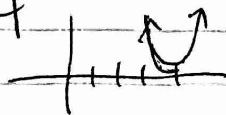
$g(x) = x^2 + 2x - 3 \quad y \geq -4$

$h(x) = x^3 - 4 \quad y \geq -4$

$j(x) = 2^x - 5 \quad y \geq -5$

$k(x) = \sqrt{x-4} \quad y \geq -4$

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



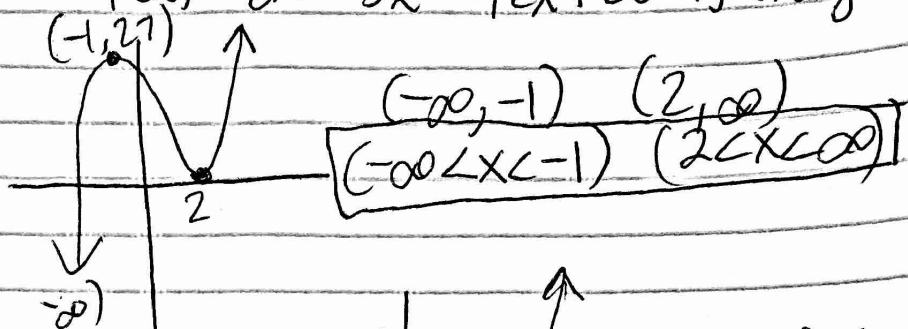
* 22. $g(x) = \frac{x^2}{x}$

Complete the eq. to create a continuous function.

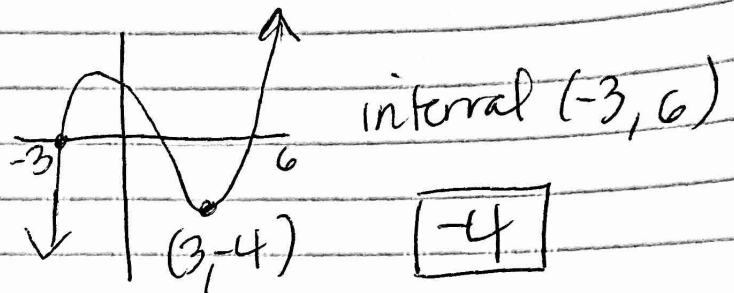
* all of the rest would have asymptotes!



*23. Intervals where $f(x) = 2x^3 - 3x^2 - 12x + 20$ is only increasing $(-1, 2)$



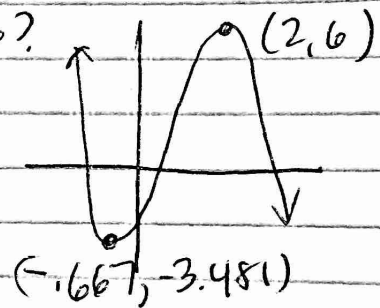
*24. $f(x) = \frac{x(x+3)(x-5)}{9}$



which interval is

*25. $f(x) = -x^3 + 2x^2 + 4x - 2$ increasing?

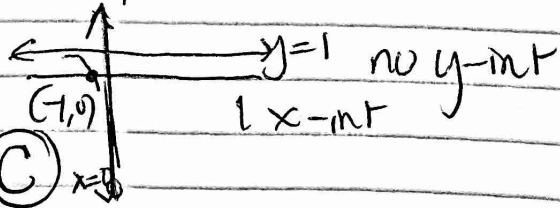
(C) $[0, 2)$



26. $g(x) = 9^x - 243$ zero?

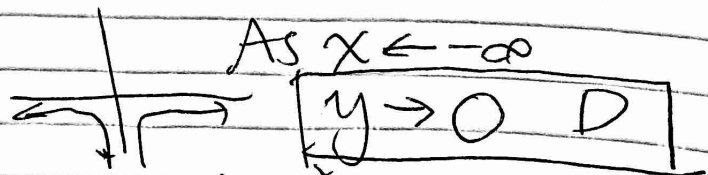
$$9^x = 243 \quad \log_9 243 = x = 2.5$$

27. $g(x) = \frac{x+1}{x}$ has



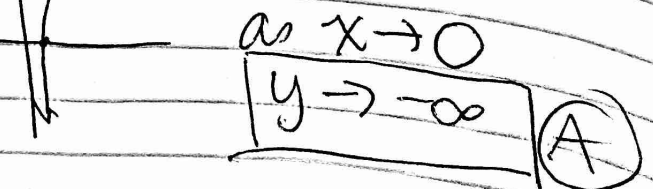
1 x-int & no y-int (C)

28. $h(x) = \frac{x-6}{x^2}$



29. $f(x) = 9 \log\left(\frac{2}{5}x\right) + 5$

30. $g(x) = \frac{4x+1}{x-3}$ vert A: $x=3$
hor A: $y=4$



31. $g(x) = x^3 - 8 \Rightarrow$ inverse $x = y^3 - 8$

$x + 8 = y^3$
 $\sqrt[3]{x+8} = y$ | $g^{-1}(x) = \sqrt[3]{x+8}$ (C)

32. $g(x) = 2x^2 - 5$ $h(x) = \frac{x}{3} - 7$

$g(h(12))$

$h(12) = \frac{12}{3} - 7 = 4 - 7 = -3$ $g(-3) = 2(-3)^2 - 5$

$2(9) - 5 = 18 - 5 = 13$ [13]

33. $f(x) = x - 1$
 $g(x) = -2x + 4$

$f(g(x)) = -2x + 4 - 1$
 $= -2x + 3$ [A]

34. zeros: $-1, -\frac{2}{3}, 5$ $f(x) = (x+1)(3x+2)(x-5)$

35. Calc. exp. regression $y = a \cdot b^x$ $y = 997.19 (1.03)^x$ (B)

36. $V = kr^2h$ $V = 1.05r^2h$

$377 = 2 \cdot 36 \cdot 10$

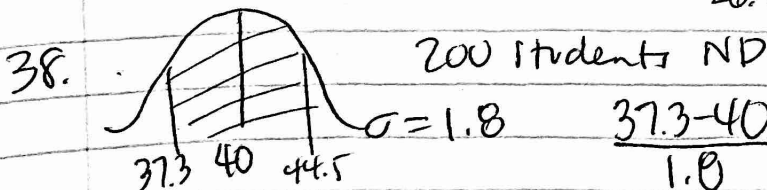
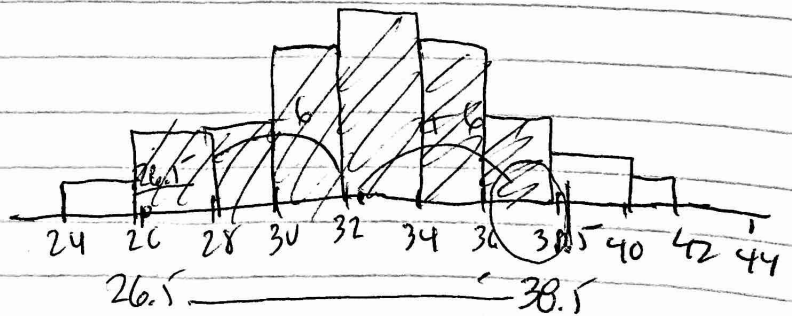
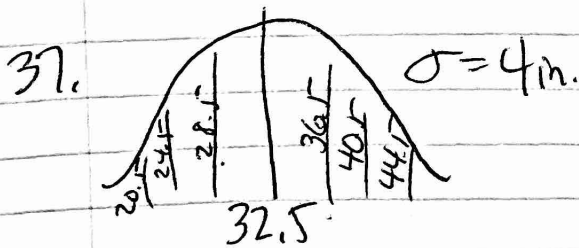
$V = 1.05(4)^2(4)$

$377 = 360k$

$V = 67.02$

$1.05 = k$

[67]

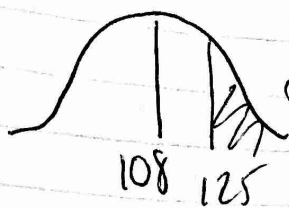


$\frac{37.3 - 40}{1.8} = -1.5 = .0668$ $.9938$

$\frac{44.5 - 40}{1.8} = 2.5$ $.9938$ $-.0668$
 $.927$

$.927(200) = 185.4$
 \therefore [185 students]

39.



$\sigma = 11$ 968 values

$P(x > 125)$

$\frac{125 - 108}{11} = 1.55$

$\frac{1 - 0.9394}{0.968}$

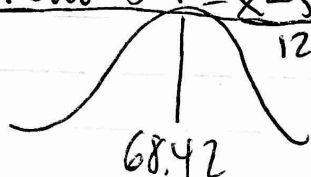
$0.0606(968) = 58.6608$

59 (D)

40. Jill: $1.8 = x - 60$ \$79.80 Marce: $1.4 = x - 55$ \$73.20

~~B Kelli: $2.1 = x - 58$ \$83.20 Tim: $2.5 = x - 57$ \$82~~

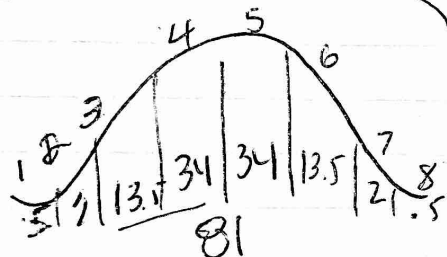
41



$\sigma = 7.91$

$\frac{57 - 68.42}{7.91} = -1.44$

42



50,000 students

$\sigma = 2.5$

$x \cdot 50,000 = 23750$

$x = \frac{23750}{50000} = 0.475$

3 & 4
or 5 & 6

43

3 cashiers 7 clerks

Committee 1 cashier 2 clerks

${}^3C_1 \cdot {}^7C_2$

$nCr = \frac{3!}{1!2!} \cdot \frac{7!}{2!5!}$

$\frac{3 \cdot 7 \cdot 6}{2} = \mathbf{63}$

44

Family Reunion
3 officers

${}_3P_3 = \frac{8!}{5!} = 8 \cdot 7 \cdot 6 = \mathbf{336}$