Honors Math 2
Quarter 1 Review

Name Key
Period_____ Date_____

Simplify the expression with positive exponents.

1. $4^2 \cdot 4^6$ $= 4^8$ $= 65{,}536$	2. $5^2 \cdot 5^1$ $= 5^3$ $= 125$
3. $(-8m^4n)^2 \cdot m^3n^5$ $(64m^8n^2)(m^3n^5) = 64m^{11}n^7$	4. $-(2x^4)^3(-1.5x^7)$ $-(8x^{12})(-1.5x^7) = 12x^{19}$
5. $(3x^5)^3(2x^7)^2$ $(27x^{15})(4x^{14}) = 108x^{29}$	6. $(-3x^4y^2)^2(2x^7y)^2$ $(9x^8y^4)(4x^{14}y^2) = 36x^{22}y^6$
7. $(-20x^3)^2(-x^7)$ $(400x^6)(-x^7) = -400x^{13}$	8. $24m^2n^{-3}p^{-2}$ $= \frac{24m^2}{n^3p^2}$
9. $-4x^{-1}y^4z^3$ $= \frac{-4y^4z^3}{x}$	10. $\frac{-2x^0}{5x^{-1}}$ $= \frac{-2x}{5}$
11. $\frac{-4x^4}{8x^{-2}}$ $-\frac{1}{2}x^6$	12. $\frac{-6^0}{7x^{-3}}$ $= \frac{-x^3}{7}$
13. $\frac{m^{3/4}}{m^{1/8}}$ $= m^{5/8}$	14. $\frac{x^{1/2}}{x^{1/4}}$ $= x^{1/4}$
15. $\frac{y^{2/3}}{y^{1/6}}$ $= y^{\frac{1}{2}}$	16. $\frac{x^{4/5}}{x^{3/10}}$ $= x^{1/2}$

Rewrite in Radical Form.

17. $5m^{\frac{2}{3}}$ $5(\sqrt[3]{m})^2$	18. $(3x)^{\frac{1}{2}}$ $\sqrt{3x}$
19. $-3m^{\frac{4}{5}}$ $-3(\sqrt[5]{m})^4$	20. $(5x)^{\frac{2}{3}}$ $(\sqrt[3]{5x})^2$

Rewrite in Exponential Form.

21. $4\sqrt[3]{m^2}$ $4m^{2/3}$	22. $\sqrt[3]{x^2}$ $x^{2/3}$
23. $\sqrt{3x}$ $(3x)^{1/2}$	24. $(\sqrt[3]{3x})^2$ $(3x)^{2/3}$

Simplify the following. Rationalize the denominator when necessary.

25. $\frac{\sqrt{4}}{\sqrt{12}} = \frac{1}{\sqrt{3}}\left(\frac{\sqrt{3}}{\sqrt{3}}\right) = \frac{\sqrt{3}}{3}$	26. $\sqrt{\frac{35}{60}} = \frac{\sqrt{7}}{\sqrt{12}} = \frac{\sqrt{7}}{2\sqrt{3}}\left(\frac{\sqrt{3}}{\sqrt{3}}\right) = \frac{\sqrt{21}}{6}$
27. $3\sqrt{2}\,(\sqrt{5} + \sqrt{2})$ $3\sqrt{10} + 3\sqrt{4} =$ $3\sqrt{10} + 6$	28. $-2\sqrt{3}\,(2\sqrt{3} + 3\sqrt{8})$ $-4\sqrt{9} - 6\sqrt{24}$ $4\cdot 6$ $-12 - 12\sqrt{6}$
29. $7\sqrt{5} - 2\sqrt{20}$ $4\cdot 5$ $7\sqrt{5} - 4\sqrt{5} = 3\sqrt{5}$	30. $\sqrt{27} + \sqrt{75}$ $9\cdot 3$ $25\cdot 3$ $3\sqrt{3} + 5\sqrt{3} = 8\sqrt{3}$
31. $4\sqrt{x} \cdot 5\sqrt{x} = 20\sqrt{x^2} = 20x$	32. $\sqrt{5x} \cdot \sqrt{20x} = \sqrt{100x^2} = 10x$
33. $\sqrt{48} + \sqrt{12}$ $16\cdot 3$ $4\cdot 3$ $4\sqrt{3} + 2\sqrt{3} = 6\sqrt{3}$	34. $\sqrt{3x} \cdot \sqrt{27x}$ $9\cdot 3$ $(\sqrt{3x})(3\sqrt{3x}) = 3\sqrt{9x^2} = 9x$

Simplify.

35. $(4m+1)^2$ $(4m+1)(4m+1)$ $16m^2+4m+4m+1$ $16m^2+8m+1$	36. $(3x+9)(2x-5)$ $6x^2-15x+18x-45$ $6x^2+3x-45$
37. $(12x^2+8x-3)+(11x^2+x+5)$ $12x^2+8x-3-11x^2+x-5$ x^2+9x-8	38. $(2n+5)(2n^2-n-7)$ $4n^3-2n^2-14n$ $10n^2-5n-35$ $4n^3+8n^2-19n-35$
39. $(7n-3n^3)+(16-8n^3+5n^2-n)$ $-11n^3+5n^2+6n+16$	40. $(4x^5+3x^4-5x+1)-(x^3+2x^4-x^5+1)$ $4x^5+3x^4-5x+1-x^3-2x^4+x^5-1$ $5x^5+x^4-x^3-5x$
41. $\sqrt{-144}=i\sqrt{144}=12i$	42. $\sqrt{-56}=i\sqrt{56}=2i\sqrt{14}$
43. $(-14+2i)-(24+26i)$ $-14+2i-24-26i$ $-38-24i$	44. $(26-13i)+(42+8i)$ $68-5i$
45. $(4+7i)(2+5i)$ $8+20i+14i+35i^2$ $8+34i+35(-1)$ $8+34i-35=-27+34i$	46. $(3-5i)(3+5i)$ $9+15i-15i-25i^2$ $9-25(-1)$ $9+25=34$

Simplify:

47. $\frac{2}{5i}\left(\frac{i}{i}\right) = \frac{2i}{5i^2} = \frac{2i}{-5} = \frac{-2i}{5}$

48. $\frac{6-5i}{4i}\left(\frac{i}{i}\right) = \frac{6i-5i^2}{4i^2} = \frac{6i+5}{-4} = \boxed{\frac{-5-6i}{4}}$

Solve the equation for x.

49. $2x^2 - 32 = 8$

$2x^2 = 40$

$x^2 = 20$

$x = \pm\sqrt{20} = \pm 2\sqrt{5}$

50. $3x^2 - 8 = -17$

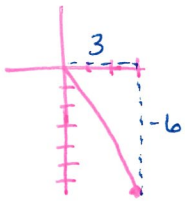
$3x^2 = -9$

$x^2 = -3$

$x = \pm\sqrt{-3} = \pm i\sqrt{3}$

Use the following complex numbers: $z = 3 - 6i$ and $w = -5 + 2i$

51.



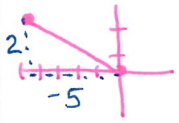
$|z|$ magnitude

$3^2 + 6^2 = h^2$

$9 + 36 = h^2$

$h = \sqrt{45} = 3\sqrt{5}$

52.



$|w|$ magnitude

$2^2 + (-5)^2 = h^2$

$4 + 25 = h^2$

$h = \sqrt{29}$

53. $\bar{z}$ conjugate

$\bar{z} = 3 + 6i$

54. $\bar{w}$ conjugate

$\bar{w} = -5 - 2i$

Given the line: $8x - 12y = 48$

55. What is the x – intercept?

$8x - 12(0) = 48$

$8x = 48$

$x = 6$ $(6, 0)$

56. What is the y-intercept?

$8(0) - 12y = 48$

$-12y = 48$

$y = -4$ $(0, -4)$

Write an equation that satisfies the given information.

57. Circle: center (4, -3) and radius 3

$(x-4)^2 + (y+3)^2 = 9$

58. Parabola: vertex (1, 0) and $a = -2$

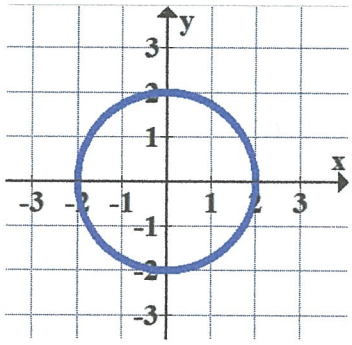
$y = -2(x-1)^2$

Match the graph and equation with its correct name.

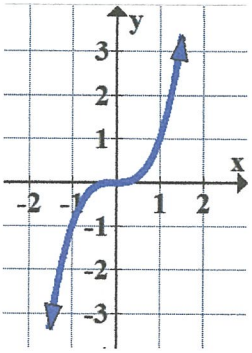
A. Square root
B. Circle
C. Absolute Value
D. Cube root
E. Parabola
F. Line
G. Cubic
H. Exponential

H 1. $y = 2^x$
B 2. $x^2 + y^2 = 4$
C 3. $y = |x - 1| + 2$
A 4. $y = 2\sqrt{x + 3} - 1$
D 5. $y = \sqrt[3]{x + `1} + 2$
G 6. $y = x^3$
F 7. $y = x$
E 8. $y = -(x + 1)^2 + 4$

1. B



2. G



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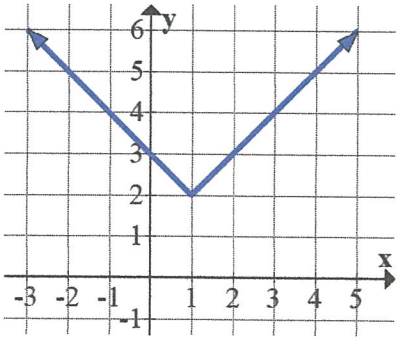

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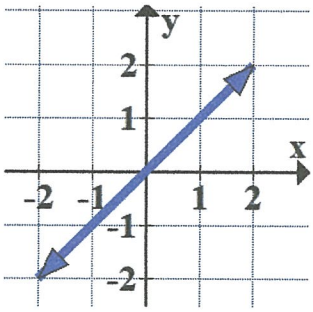

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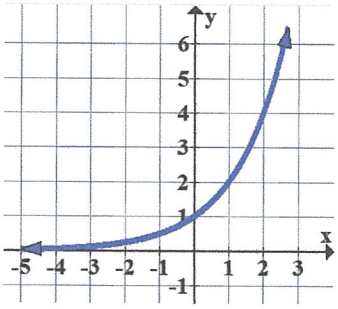

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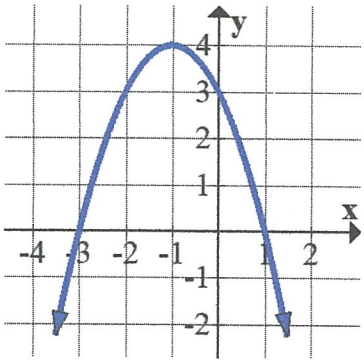
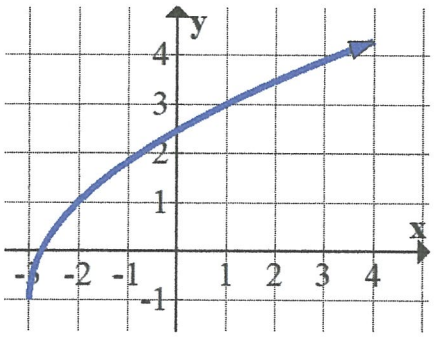
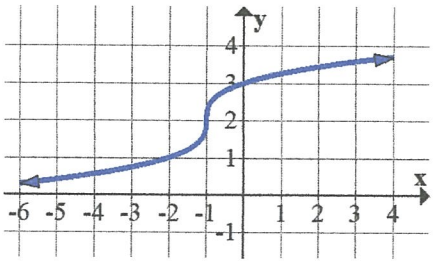


7. A



8. D