Honors Math II

Quarter 1 review

Name Key

Period_____ Date_____

Simplify.

1. $(-6m^3)(2m^4n^5)$

$-12m^7n^5$

2. $(-3x^4)^3$

$(-3)^3x^{12}$

$-27x^{12}$

3. $\left(\frac{3m^2}{n^4}\right)^3$ $\frac{3^3m^6}{n^{12}} = \frac{27m^6}{n^{12}}$

4. $3\sqrt{7}\,(4\sqrt{2} - 5\sqrt{3})$

$12\sqrt{14} - 15\sqrt{21}$

5. $\sqrt[6]{\sqrt[4]{2x}}$

$\sqrt[24]{2x}$ or $(2x)^{1/24}$

6. $\sqrt{2x} \cdot \sqrt[3]{2x}$

$(2x)^{1/2} \cdot (2x)^{1/3} = (2x)^{5/6}$

7. $\left(\frac{m^{10}}{n^5}\right)^{\frac{3}{5}} = \frac{m^6}{n^3}$

8. $(4u^2v^{10})^2(u^2v^3)^{-2}$

$(16u^4v^{20})(u^{-4}v^{-6})$

$16v^{14}$

9. $\sqrt[6]{\frac{x^{36}y^{42}}{z^{-12}}}$

$\sqrt[6]{x^{36}y^{42}z^{12}} =$

$= x^6y^7z^2$

Find the sum or difference.

10. $(3m - 3m^3) + (14 + 8m^3 - 5m^2 + m)$

$5m^3 - 5m^2 + 4m - 14$

Find the product.

11. $(2n - 3)(4n^2 + 2n - 5)$

$8n^3 + 4n^2 - 10n$

$-12n^2 - 6n + 15$

$8n^3 - 8n^2 - 16n + 15$

12. $(4x + 1)^2$

$(4x+1)(4x+1)$

$16x^2 + 8x + 1$

Solve the equation for x.

13. $2x^2 - 10 = -30$

$2x^2 = -20$

$x^2 = -10$

$x = \pm\sqrt{-10} = \pm i\sqrt{10}$

Simplify.

14. $\sqrt{-125}$

$i\sqrt{125}$

$5i\sqrt{5}$

Simplify:

15. $\frac{2i}{3+2i}\,\frac{(3-2i)}{(3-2i)}$

$\frac{6i - 4i^2}{9 - 6i + 6i - 4i^2}$

$\frac{6i + 4}{13} = \frac{4 + 6i}{13}$

16. $(3 - 2i)(4 + 2i)$

$12 + 6i - 8i - 4i^2$

$12 - 2i + 4$

$16 - 2i$

Given: $z = 2 - i$ $\quad w = 3 + 2i$

Find:

17. $|w|$ $= \sqrt{(3)^2 + (2)^2}$

$|w| = \sqrt{13}$

18. $2z + \overline{w}$

$2(2-i) + (3-2i)$

$4 - 2i + 3 - 2i$

$7 - 4i$

19. $|3z - 2w|$

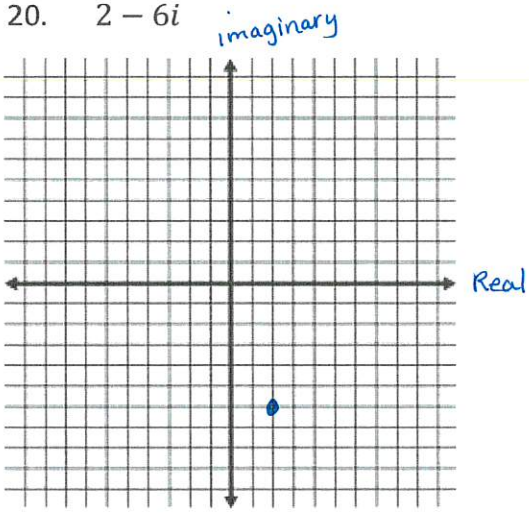
$|3(2-i) - 2(3+2i)|$

$|6 - 3i - 6 - 4i|$

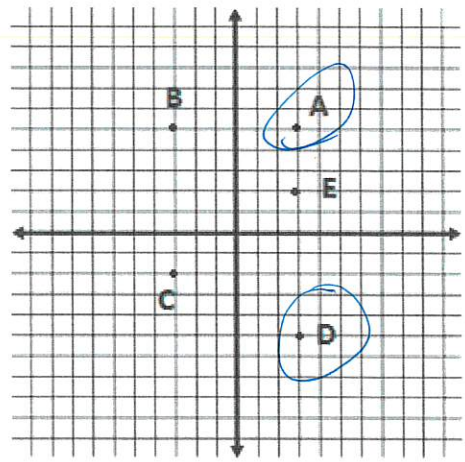
$|-7i| = 7$

Graph the complex number.

20. $2 - 6i$



21. Which 2 points are conjugates?



A & D

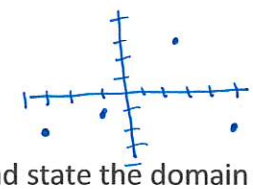
Identify the domain and range of the given relation. Then represent the relation using a graph and a mapping diagram.

22. (5, -2), (-3, -2), (3, 3), (-1, -1)

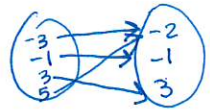
D: $\{-3, -1, 3, 5\}$

R: $\{-2, -1, 3\}$

Graph

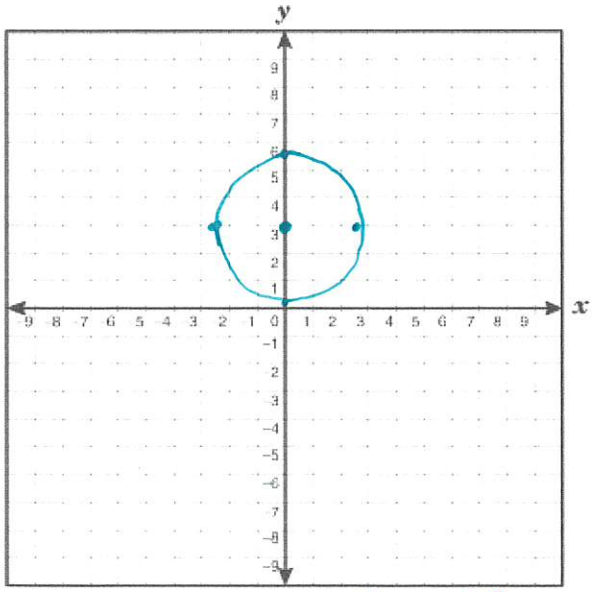


Mapping



Graph the following equations and state the domain and range.

23. $x^2 + (y - 3)^2 = 7$



C: $(0, 3)$

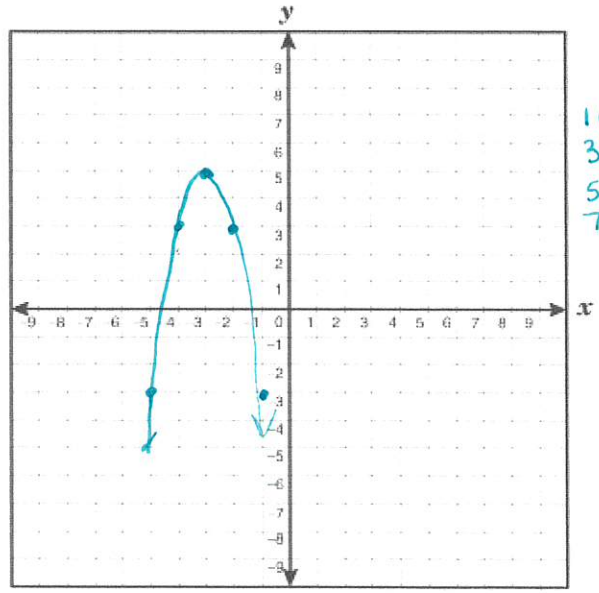
R: $\sqrt{7}$

D: $[-\sqrt{7}, \sqrt{7}]$

R: $[3 + \sqrt{7}, 3 - \sqrt{7}]$

24. $y = -2(x + 3)^2 + 5$

V: $(-3, 5)$



$1(-2) = -2$

$3(-2) = -6$

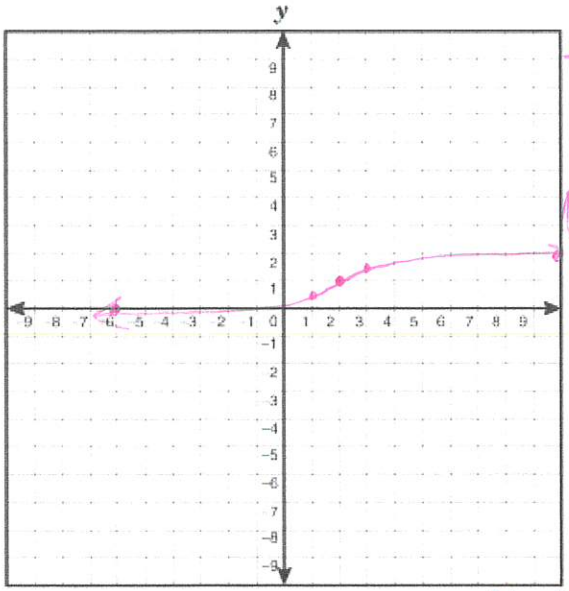
$5(-2) = -10$

$7(-2) = -14$

D: $\mathbb{R}$

R: $(-\infty, 5]$

25. $y = \frac{1}{2}\sqrt[3]{x-2} + 1$ (2, 1)

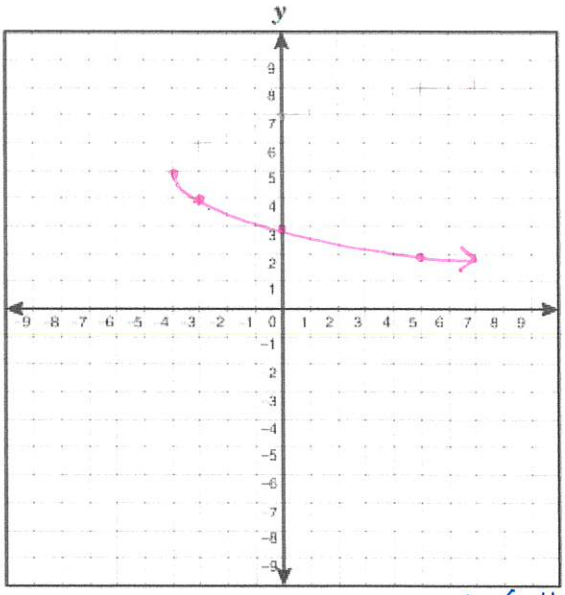


Pattern
up 1 over 1
up 1 over 7
up 1 over 19
stretch by ½
up ½ over 1
up ½ over 7

D: $\mathbb{R}$
R: $\mathbb{R}$

26. $y = -\sqrt{x+4} + 5$ (−4, 5)

reflects



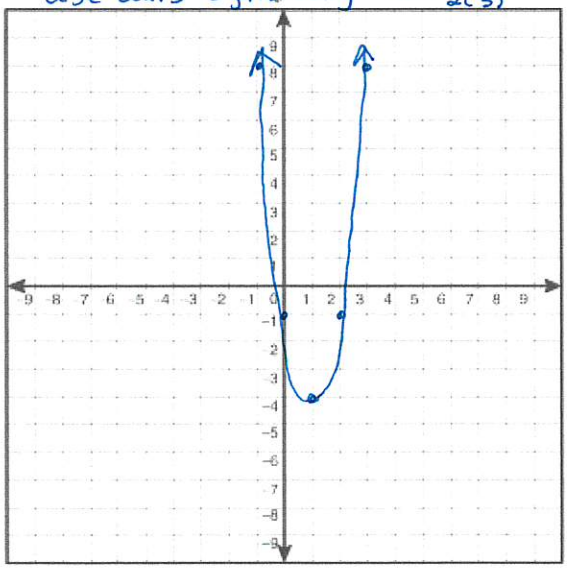
Pattern
up 1 over 1
up 1 over 3
up 1 over 5

Reflect down

D: $[-4, \infty)$
R: $[5, \infty)$

27. $y = 3x^2 - 6x - 1$ vertex (1, −4)

use axis symmetry $x = \frac{6}{2(3)}$

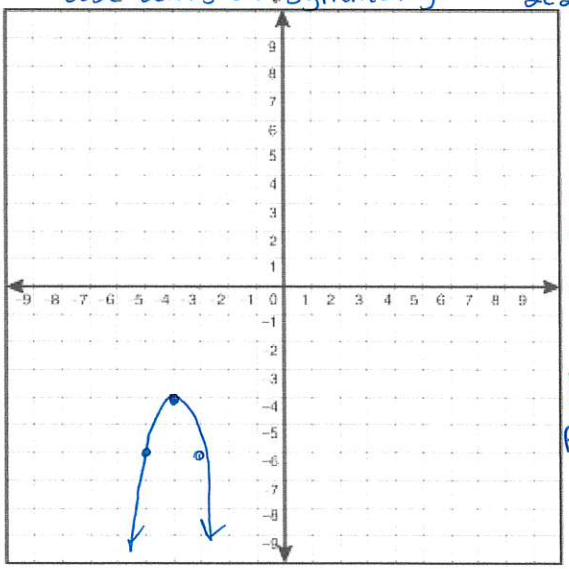


$1(3) = 3$
$3(3) = 9$
$5(3) = 15$
7

D: $\mathbb{R}$
R: $[-4, \infty)$

28. $y = -2x^2 - 16x - 36$ V: (−4, −4)

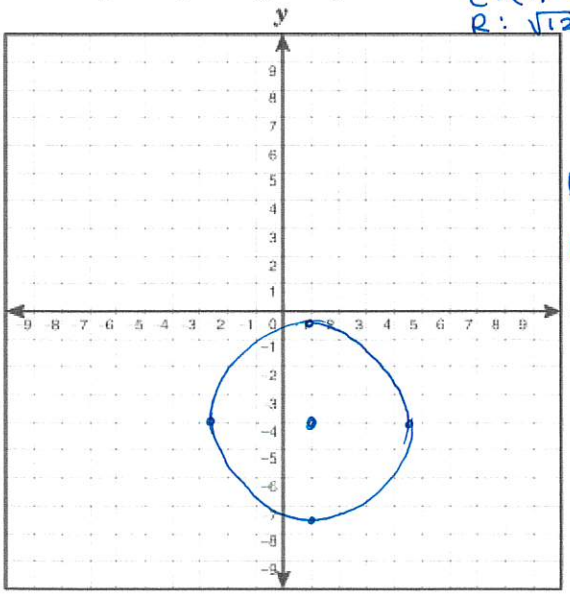
use axis of symmetry $x = \frac{16}{2(-2)}$



$1(-2) = -2$
$3(-2) = -6$
$5(-2) = -10$
7

D: $\mathbb{R}$
R: $(-\infty, -4]$

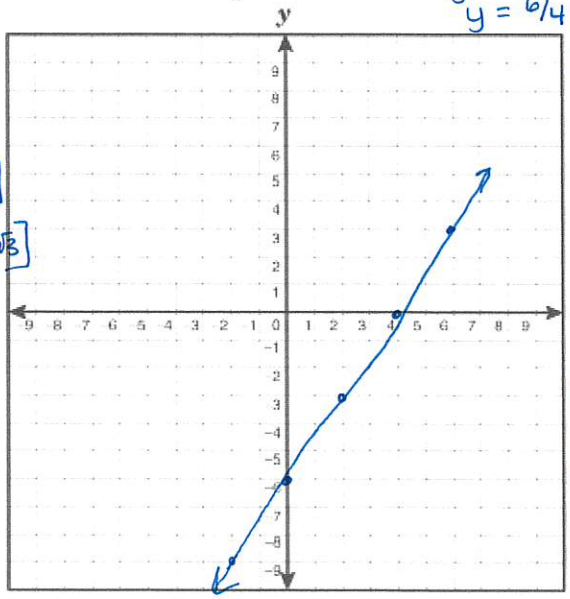
29. $(x-1)^2 + (y+4)^2 = 12$ C: (1, −4)
R: $\sqrt{12}$



D: $[1-2\sqrt{3}, 1+2\sqrt{3}]$
R: $[-4+2\sqrt{3}, -4-2\sqrt{3}]$

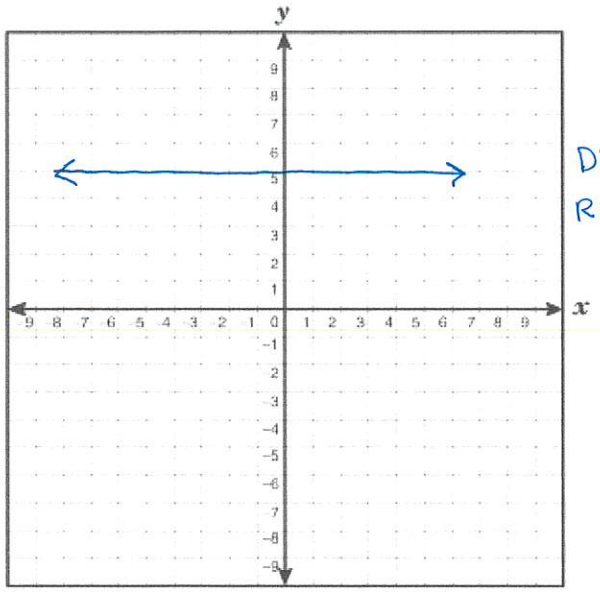
30. $6x - 4y = 24$

$-4y = -6x + 24$
$y = 6/4\,x - 6$
$y = \frac{3}{2}x - 6$



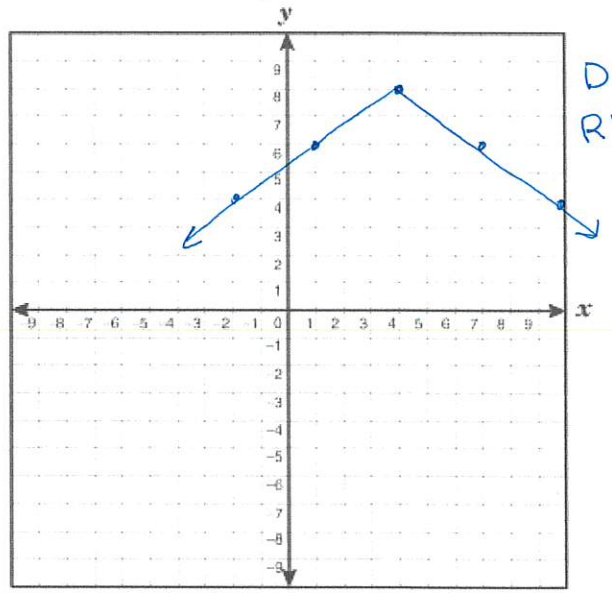
D: $\mathbb{R}$
R: $\mathbb{R}$

31. $y = 5$



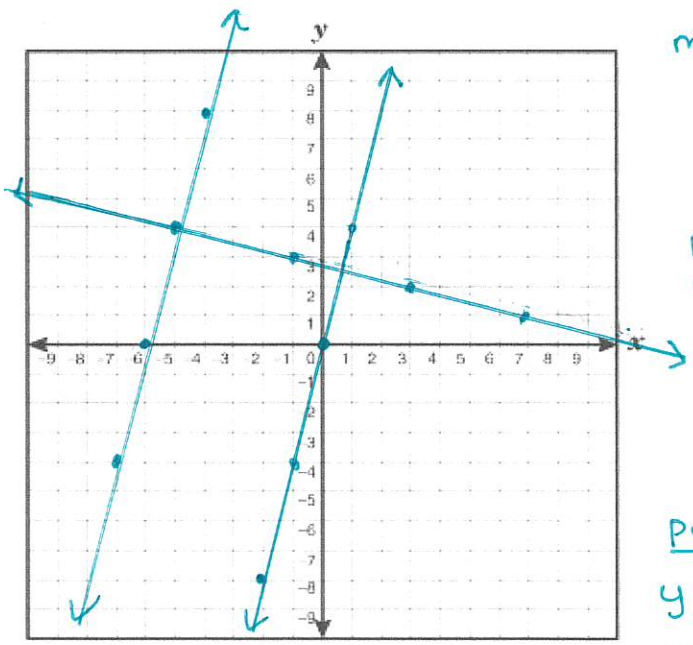
D: $\mathbb{R}$
R: [5]

32. $y = -\frac{2}{3}|x - 4| + 8$ V: (4,8)



D: $\mathbb{R}$
R: $(-\infty, 8]$

33. Graph and write the equation of the line through the points (0, 0) and (-2,-8).
What is the domain, range and x and y intercepts of the line?



$m = \frac{0+8}{0+2} = \frac{8}{2} = 4$

$y = 4x$
D: $\mathbb{R}$
R: $\mathbb{R}$
x-int: (0,0)
y-int: (0,0)

parallel line

$y - 4 = 4(x+5)$
$y = 4x + 20 + 4$
$y = 4x + 24$

perpendicular line

$y - 4 = -1/4\ (x+5)$
$y = -1/4\,x - 5/4 + 4$
$y = -1/4\,x + 11/4$

Write the equation of the lines that are parallel and perpendicular to the above equation that goes through the point (-5, 4).
Graph the 2 lines.
What is the domain, range and x and y intercepts of the 2 lines?

Parallel
D: $\mathbb{R}$ x-int: (-6,0)
R: $\mathbb{R}$ y-int: (0,24)

Perpendicular
D: $\mathbb{R}$ x-int: (11,0)
R: $\mathbb{R}$ y-int: (0, 11/4)