Algebra 1 3207 Name: KEY

Chapters 10 and 11 Review – FINALS REVIEW

10.1 & 10.2 – Describe if each graph is narrow or wide. Coefficient of x^2 → $a > 1$ Narrow, $a = 1$ Neither, $0 < a < 1$ wide

1. $y = 3x^2$ — Narrow
2. $y = -0.5x^2$ — Wide
3. $y = x^2 - 4$ — Neither
4. $y = 2x^2 + 5$ — Narrow

Identify the axis of symmetry ($x = \frac{-b}{2a}$). Then, find the vertex (substitute the x and find y).

5. $y = 3x^2$ — $a=3$ $b=0$ $c=0$

$x = \frac{0}{2(3)} = 0$

$y = 3(0)^2 = 0$

x = 0

vertex = (0,0)

6. $y = 3x^2 + 6x$ — $a=3$ $b=6$ $c=0$

$x = \frac{-6}{2(3)} = -1$

$y = 3(-1)^2 + 6(-1)$

$y = 3 - 6$

$y = -3$

x = −1

vertex = (−1, −3)

7. $y = -x^2 + 2x + 1$ — $a=-1$ $b=2$ $c=1$

$x = \frac{-2}{2(-1)} = 1$

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

$y = -1 + 2 + 1$

$y = 2$

x = 1

vertex = (1, 2)

10.3 – Find the square roots of each number.

8. 25 — ± 5
9. 64 — ± 8
10. .81 — ± 0.09
11. 900 — ± 30
12. $\frac{4}{9}$ — $\pm \frac{2}{3}$
13. $\frac{25}{36}$ — $\pm \frac{5}{6}$
14. $\frac{16}{25}$ — $\pm \frac{4}{5}$
15. $\frac{1}{9}$ — $\pm \frac{1}{3}$

11.1 – Simplify each radical expression. No decimal answers!

16. $\sqrt{32}$ — 8, 4; 4, 2; 2, 2 — $4\sqrt{2}$
17. $\sqrt{147}$ — 3, 49; 0, 7 — $7\sqrt{3}$
18. $5\sqrt{70}$ — 7, 10; 5, 2 — $5\sqrt{70}$
19. $2\sqrt{27}$ — 9, 3; 3, 3 — $6\sqrt{3}$

CH. 10 + 11 FINALS REVIEW

20. $2\sqrt{5} \cdot 2\sqrt{5}$

$2 \cdot 2 \cdot (\sqrt{5})^2$

$4(5)$

20

21. $\sqrt{15} \cdot \sqrt{6}$

$3 \cdot 5 \quad 2 \cdot 3$

$3\sqrt{10}$

22. $2\sqrt{18} \cdot \sqrt{8}$

$6 \cdot 3 \quad 2 \cdot 4$

$2 \cdot 3 \quad 2 \cdot 2$

24

23. $3\sqrt{5} \cdot 2\sqrt{5}$

$3 \cdot 2 \cdot (\sqrt{5})^2$

$6(5)$

30

10.4, 10.5 & 10.7 – Solve using factoring, finding the square roots, or using the quadratic formula.

24. $x^2 = 36$

$x = \pm\sqrt{36}$

$x = \pm 6$

25. $x^2 + x - 2 = 0$

$(x+2)(x-1) = 0$

$x = -2$ or 1

26. $c^2 - 100 = 0$

$(c+10)(c-10) = 0$

$c = \pm 10$

27. $2x^2 - 54 = 284$

$-284 \quad -284$

$2x^2 - 338 = 0$

GCF = 2

$2(x^2 - 169) = 0$

$2(x+13)(x-13) = 0$

$x = \pm 13$

28. $h^2 + 4 = 0$

*Cannot factor

No Solution

29. $x^2 + 6x - 2 = 0$ $\quad a=1 \; b=6 \; c=-2$

Quadratic Formula =

$x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \dfrac{-6 \pm \sqrt{36+8}}{2}$

$x = \dfrac{-6 \pm \sqrt{44}}{2} = \dfrac{-6 \pm 2\sqrt{11}}{2}$

$\sqrt{44}$

$4 \cdot 11$

$2 \cdot 2$

$x = -3 \pm \sqrt{11}$

11.2 – Determine whether the given sides lengths are sides of a right triangle.

30. 4, 5, 7 (a b c) — NO

$a^2 + b^2 = c^2$

$4^2 + 5^2 = 7^2$

$16 + 25 = 49$

31. 6, 8, 10 (a b c) — YES

$a^2 + b^2 = c^2$

$36 + 64 = 100$

32. $\sqrt{3}, \sqrt{4}, \sqrt{5}$ (a b c)

$(\sqrt{3})^2 + (\sqrt{4})^2 = (\sqrt{5})^2$

$3 + 4 = 5$ NO

Find the missing side length of each right triangle.

33. a = 19, b = 45, c = _____

$a^2 + b^2 = c^2$

$19^2 + 45^2 = c^2$

$c = \sqrt{2386}$

34. a = _____, b = 24, c = 39

$a^2 + b^2 = c^2$

$a^2 + 24^2 = 39^2$

$a = \sqrt{945}$

$a = 3\sqrt{105}$

CH. 10 + 11 FINALS REVIEW

35. a = 42, b = 37, c = _____

$a^2+b^2=c^2$

$42^2+37^2=c^2$

$1764+1369=c^2$

$c=\sqrt{3133}$

36. a = 36, b = 15, c = _____

$a^2+b^2=c^2$

$36^2+15^2=c^2$

$c=\sqrt{1521}$

11.3 – Find the distance and midpoint of each pair of points. $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$,

$d=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

37. (1, 3) and (2, 8)

$x_1\ y_1 \quad x_2\ y_2$

$d=\sqrt{(2-1)^2+(8-3)^2}$

$d=\sqrt{1^2+5^2}$

$d=\sqrt{26}$

mdpt.

$\left(\frac{1+2}{2}, \frac{3+8}{2}\right)$

d = $\sqrt{26}$ m = (1.5, 55)

38. (6, -2) and (-7, -10)

$x_1\ y_1 \quad x_2\ y_2$

$d=\sqrt{(-7-6)^2+(-10-(-2))^2}$

$d=\sqrt{169+64}$

$d=\sqrt{233}$

mdpt.

$\left(\frac{6+(-7)}{2}, \frac{-2+(-10)}{2}\right)$

d = _____ m = $\left(-\frac{1}{2}, -6\right)$

39. (11, 7) and (-7, -11)

$x_1\ y_1 \quad x_2\ y_2$

$d=\sqrt{(-7-11)^2+(-11-7)^2}$

$d=\sqrt{(-18)^2+(-18)^2}$

$d=\sqrt{648}$

mdpt.

$\left(\frac{4}{2}, \frac{-4}{2}\right)$

d = $18\sqrt{2}$ m = (2, -2)

40. (0, 6) and (-2, 9)

$x_1\ y_1 \quad x_2\ y_2$

$d=\sqrt{}$

d = _____ m = _____

11.4 – Simplify each expression.

41. $3\sqrt{24}-2\sqrt{6}$

$8\ 3 \quad 2\ 3$

$4\ 2$

$2\ 2$

$6\sqrt{6}-2\sqrt{6}=$

$4\sqrt{6}$

42. $\sqrt{27}+\sqrt{3}$

$9\ 3$

$3\ 3$

$3\sqrt{3}+\sqrt{3}=$

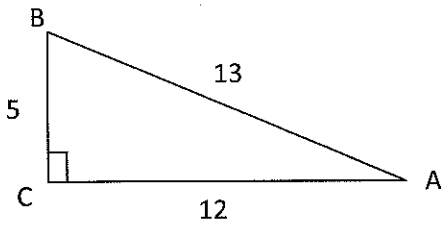
$4\sqrt{3}$

43. $(3\sqrt{2}-\sqrt{5})(2\sqrt{5}+4\sqrt{2})$

_____

CH. 10 + 11 FINALS REVIEW

11.7 – Use △ABC to evaluate each expression.



44. sin A $\frac{5}{13}$ 42. cos A $\frac{12}{13}$ 43. tan A $\frac{5}{12}$

44. sin B $\frac{12}{13}$ 45. cos B $\frac{5}{13}$ 46. tan B $\frac{12}{5}$

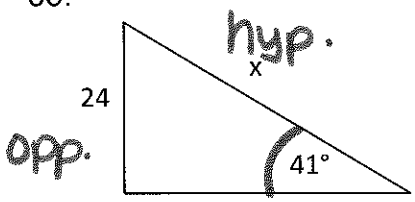
Evaluate each expression. Round to the nearest ten-thousandth.

47. tan 58 48. cos 36 49. tan 32 50. sin 27

51. cos 42 52. sin 63 53. sin 23 54. cos 45

Find the value of x to the nearest tenth.

55.

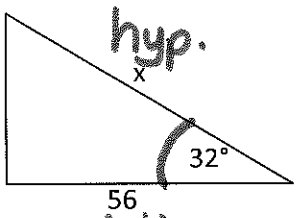


$\sin 41° = \frac{24}{x}$

$x = \frac{24}{\sin 41°}$

$x =$

56.

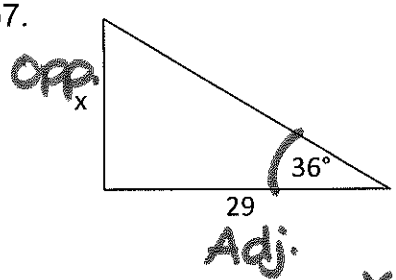


$\cos 32° = \frac{56}{x}$

$x = \frac{56}{\cos 32°}$

$x =$

57.



$\tan 36° = \frac{x}{29}$

$x = 29(\tan 36°)$

$x =$

SOH-CAH-TOA