

Review 1 Answers, Fall 2015

1. (a) $\frac{15}{5} = 3, 16^{1/4} = 2$; (b) $\frac{15}{5}, 16^{1/4}, \frac{0}{3} = 0, \sqrt[3]{-8} = -2$; (c) $\frac{15}{5}, 16^{1/4}, \frac{0}{3}, \sqrt[3]{-8}, 0.\bar{9}, \frac{1}{2}, 0.08$; (d) $\sqrt{2}, \pi$; (e) $\frac{15}{5}, 16^{1/4}, \frac{0}{3}, \sqrt[3]{-8}, 0.\bar{9}, \frac{1}{2}, 0.08, \sqrt{2}, \pi$
2. (a) commutative; (b) distributive; (c) associative; (d) inverse; (e) identity
3. (a) 32; (b) $-\frac{27}{4}$; (c) $-\frac{12}{5}$
4. $-\frac{5}{2}$
5. (a) $y^6 - 18y^2 + 8y$; (b) $16y^2 + 42y - 49$; (c) $16a^2 - 24ab + 9b^2$
6. (a) $3(z - 4)^2(3z - 11)$; (b) $(3x + 1)(2x - 5)$; (c) $(7a^4 + 3b)(7a^4 - 3b)$; (d) $8(y - 5z^2)(y^2 + 5yz^2 + 25z^4)$; (e) $(x - 2)(x + 2)(x^2 + 3)$; (f) $2x(4 - 3x)^{1/3}(4 - 5x)$
7. $\frac{6y - 5}{3y - 2}$; domain: $y \neq -\frac{1}{2}, \frac{2}{3}$
8. (a) $\frac{x + 1}{x + 4}$; (b) $4x(x - 1)$; (c) $\frac{x + 9}{(x - 3)(x - 1)(x + 1)}$
9. (a) $\frac{x - 2}{x - 3}$; (b) $\frac{3 - x}{x^2 - 1}$
10. (a) $-\frac{16p^7}{q}$; (b) $-8y^{11}p$; (c) $\frac{a^{11/8}}{b^{1/6}}$; (d) $\frac{n^{1/2}}{5m^{5/2}}$
11. (a) $10\sqrt{2}$; (b) $2\sqrt[3]{2}$; (c) $\frac{8y^4\sqrt{2m}}{m^2}$; (d) $-9m\sqrt{2m} + 5m\sqrt{m}$; (e) $\frac{7 + \sqrt{3}}{23}$
12. (a) $x = 5$; (b) $x = -\frac{11}{3}$; (c) $x = \frac{11(k + p)}{10 - a}$
13. 13 inches on each side
14. 8 miles
15. \$55,000 at 5.5%; \$35,000 at 6%
16. (a) \$4.31; (b) 47.6 years, around 2003
17. (a) $13 - 3i$; (b) $-19 + 9i$; (c) $19 + 17i$; (d) $7 - 24i$; (e) $1 - 2i$
18. (a) $-i$; (b) 1; (c) -1 ; (d) i

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19. (a) $-5, 3$; (b) $\frac{1 \pm \sqrt{41}}{4}$; (c) $\frac{3}{2} \pm \frac{i\sqrt{3}}{2}$

20. $\frac{3 \pm \sqrt{17}}{4}$

21. $\frac{3}{8}$

22. 6.25 sec and 7.5 sec