

Answers to MHF4U Exam Review

Check

- 1.a. $(x-5)(x+5)(x+3)$
 b. $(x-4)(x+3)(x+2)$
 c. $(4x+3y)(16x^2-12xy+9y^2)$
 d. $(5x+2)(2x-1)(3x+2)$
 e. $(x+1)(x-5)(x^2-x+1)(x^2+5x+25)$
 f. $(x+2)(x-2)^2(x^2+4)(x^2+2x+4)$

2. $x^{\frac{-a}{2} + \frac{b}{2}}$

3a. $\sqrt{5}$ b. $\frac{1}{12}$ c. 1 d. $\frac{39}{10}$

4. $\log_5\left(\frac{25(x-7)^a}{w^{\frac{2}{3}}}\right)$

- 5a. 4 b. 7 c. $\{(3, -5), (5, -10)\}$
 d. $\{(3, 9), (5, 12)\}$

6a. 132° b. $\frac{10080}{\pi}$ B 3208.6°

7a. $\frac{7\pi}{3}$ b. $\frac{-2\pi}{15}$

8a. $\frac{-1}{\sqrt{2}} = \frac{-\sqrt{2}}{2}$ b. 1

c. $-\frac{\sqrt{3}}{3}$ d. $\frac{\sqrt{6} + \sqrt{2}}{4}$ e. $\frac{\sqrt{3} - \sqrt{6}}{3}$

9a. $\frac{7\sqrt{13}}{13}$ b. $\frac{5}{13}$ c. $\frac{18\sqrt{13} - 26}{91}$

d. $\frac{-2(9 + \sqrt{3})}{3(4 + \sqrt{3})} = \frac{10\sqrt{3} - 66}{39}$

10a. $\frac{41 - 8x + 5x^2 - x^3}{x-5}$

b. $x^3 - 5x^2 + 8x - 40$

c. $\frac{1}{x^2 + 3}$

d. $\frac{8x^2 - 80x + 201}{(x-5)^2}$

e. $x^4 + 16x^2 + 72$ f. $\frac{1}{x} + 5$

g. $\pm\sqrt{x-8}$ h. x i. $\frac{35}{2}$ j. $\frac{-3}{2}$

k. $\frac{1}{28}$ l. undefined

11a. 3, 2, -2 b. -1, $3 \pm 2\sqrt{2}$
 c. -2, $-1 \pm 2i$ d. $2 \pm \sqrt{3}$ e. $\frac{-1}{2}$

f. $\frac{\log 2}{\log 7} + 2$ B 2.36 g. 13

h. 5 i. 6 j. no solution

k. $\frac{2\log 8 + \log 5}{7\log 5 - \log 8}$ B 0.3 l. $\frac{19}{4}$

m. $\frac{\log 5}{\log 3}$ B 1.5 n. $\frac{3\pi}{2}$

o. $0, \frac{2\pi}{3}, \frac{4\pi}{3}, 2\pi$ p. $0, \frac{\pi}{4}, \pi, \frac{7\pi}{4}, 2\pi$

q. $\frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$

12a. $x \in (-\infty, -1) \cup (0, 2) \cup (4, +\infty)$

b. $x \in (-\infty, -7) \cup (-7, 3)$

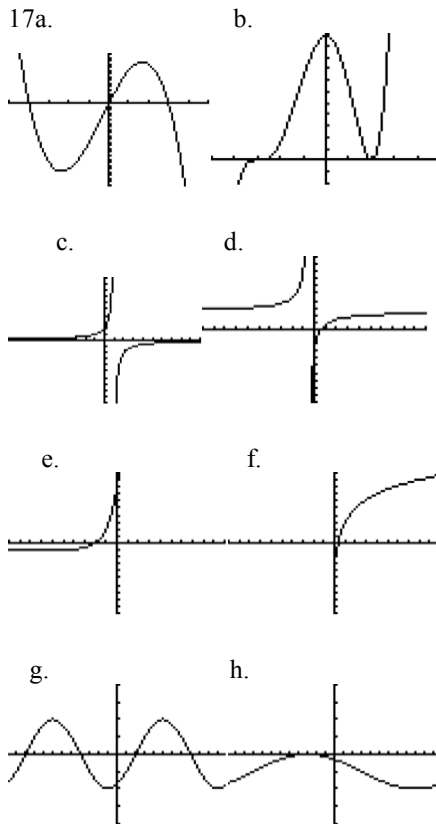
c. $x \in \left[-3, \frac{-1}{2}\right] \cup [2, +\infty)$

d. $x \in [-3, -2] \cup [3, +\infty)$

e. $x \in (-\infty, -3) \cup \left(-\frac{1}{2}, 1\right)$

13. - 15. (proofs vary)

16a. neither b. even c. odd



18. $x \in (-5, 1) \cup \left(\frac{35}{8}, +\infty\right)$

19a. $R: \{y | -5 \leq y \leq 1, y \in \circ\}$,

Period = $\frac{2\pi}{3}$, amplitude = 3,

Phase shift = $\frac{\pi}{12}$ right, No

Asymptotes

b. $R: \{y \in \circ\}$, Period = π ,

no amplitude, phase shift = $\frac{\pi}{6}$

right,

Asymptotes: $x = \frac{\pi}{6}$, $x = \frac{7\pi}{6}$

20. a=3, b=6

21. 3.5 cm

22a. $P(x) = 2x + \frac{400}{x}$

b. 27.8 x 7.2 m

23. x-int=1, -1, 2

y-int = $\frac{-1}{3}$

VA: x=3, x=-2

Obl A: y=x-1

24a. 16 b. -108

25. 230 people/year

26a. $E = 1.4 \log\left(\frac{C_1}{C_2}\right)$

b. 0.42 c. neg - cell gains energy

27. $\frac{\pi}{12}$ m/s

28. $\theta = 1.5 \text{ rad}$ or $\theta = \frac{270}{\pi}$ degrees