

## ANSWERS

### REVIEW - UNIT 1

1. a)  $x+1$    b)  $8-2\pi$    c)  $13r-37$    2. a)  $\frac{7}{2}$    b)  $-\frac{12}{13}$
3. (a) Natural numbers:  $\frac{15}{5}, 16^{\frac{1}{4}}$    (b) Integers:  $\frac{0}{3}, \sqrt[3]{-8}, \frac{15}{5}, 16^{\frac{1}{4}}$
- (c) Rational numbers:  $\frac{0}{3}, \sqrt[3]{-8}, \frac{15}{5}, \frac{1}{2}, 16^{\frac{1}{4}}$    (d) Irrational numbers:  $\sqrt{2}, \pi$
- (e) Real numbers:  $\sqrt{2}, \frac{0}{3}, \pi, \sqrt[3]{-8}, \frac{15}{5}, \frac{1}{2}, 16^{\frac{1}{4}}$ .
4. a)  $\frac{4x}{x^2-1}$    b)  $\frac{2}{x^2(x+2)^2}$
5. a)  $2x^2(x+2)^2(5-x)$    b)  $x(x-4)(2x-1)(2x+1)$
- c)  $(x-2)(x+2)(x^2+3)$    d)  $4x^2(2x-1)(4x^2+2x+1)$
6.  $\frac{6y-5}{3y-2}$ ; Domain:  $\left\{y \mid y \neq -\frac{1}{2}, \frac{2}{3}\right\}$
7. a)  $4x(x-1)$  or  $4x^2-4x$ ;  $x \neq -1$    b) 1;  $x \neq 0, x \neq \frac{2}{3}, x \neq -\frac{3}{2}$
8. a)  $\frac{x-2}{x-3}$ ; Domain:  $\{x \mid x \neq 0, 2, 3\}$    b)  $\frac{3-x}{x^2-1}$ ; Domain:  $\{x \mid x \neq 0, -1, 1\}$
- c)  $\frac{x^2-x+1}{x\sqrt{1-x}}$    9. a)  $-\frac{y^2}{x^5}$    b)  $-\frac{x+y}{x^2y^2}$    c)  $\frac{16x^4}{9y^2}$
10. a)  $-\frac{x^3\sqrt[5]{2y^3z^2}}{2y^2z}$    b)  $x(\sqrt{x}+\sqrt{y})$    c)  $\sqrt{10}+\sqrt{8}$
11. a)  $4|x|$    b)  $7\sqrt{2}$    c)  $(1+x)^2$  or  $1+2x+x^2$    d) 0   e) cannot be simplified
12. a)  $-\frac{32}{3}$    b) 256   13.  $y = -3$    14. a)  $R(x) = \frac{50x^2-100}{x+20}$
- b)  $C(x) = 20+30x$    c)  $R(80) = 3199$  (hundred of \$),  
 $C(80) = 2420$  (hundred of \$)    $P(80) = 779$  (hundred of \$)
15. a)  $a^{10}+10a^8+40a^6+80a^4+80a^2+32$    b)  $8x^3-36x^2y+54xy^2-27y^3$
16. a)  $3a^3-a^2-a$    b)  $x^5-x^4+3x^3-5x^2+5x-3$
- c)  $2x^3-x^2+x+1-\frac{5}{2x+1}$