Angles Beyond 360°

Date:

11. Give the angle $0° \le \theta < 360°$ which is ***coterminal*** to each of the following angles. Include one middle step, then give the quadrant of the angle.

a) 500°
$\theta = 500° - 360°$
$= 140°$
(Q2)

b) 670°
$\theta = 670° - 360°$
$= 310°$
(Q4)

c) 415°
$\theta =$
$=$
(Q__)

d) 905°
$\theta = 905° - 2(360°)$
$= 185°$
(Q3)

e) 2000°
$\theta = 2000° - 5(360°)$
$= 200°$
(Q3)

f) 1234°
$\theta =$
$=$
(Q__)

12. Give the angle $0° \le \theta < 360°$ which is ***coterminal*** to each of the following angles. Include one middle step, then give the quadrant of the angle.

a) −70°
$\theta = -70° + 360°$
$= 290°$
(Q4)

b) −200°
$\theta =$
$=$
(Q__)

c) −400°
$\theta = -400° + 2(360°)$
$= 320°$
(Q4)

d) −700°
$\theta =$
$=$
(Q__)

e) −820°
$\theta = -820° + 3(360°)$
$= 260°$
(Q3)

f) −2000°
$\theta =$
$=$
(Q__)

13. After each given angle, write the quadrant number in the brackets, then state the first quadrant angle $(0° \le \alpha < 90°)$ which is the ***related angle*** to each of the following angles.

a) 125° (Q2)
$\alpha = 180° - 125°$
$= 55°$

b) 169° (Q__)
$\alpha =$

c) 241° (Q3)
$\alpha = 241° - 180°$
$= 61°$

d) 318° (Q4)
$\alpha = 360° - 318°$
$= 42°$

e) 276° (Q__)
$\alpha =$

f) 267° (Q3)
$\alpha = 267° - 180°$
$= 87°$

14. Find the angle $0° \le \theta < 360°$ which is ***coterminal*** to each of the following angles, then the ***related acute angle*** $(0° \le \alpha < 90°)$ which matches that angle.

a) 490°
$\theta = 490° - 360°$
$= 130°$ (Q2)
$\alpha = 180° - 130°$
$= 50°$

b) 685°
$\theta =$
$=$ (Q__)
$\alpha =$

c) 820°
$\theta = 820° - 720°$
$= 100°$ (Q2)
$\alpha = 80°$

d) −756°
$\theta = +3(360°)$
$= 324°$ (Q4)
$\alpha = 360° - 324°$
$= 36°$

e) −263°
$\theta =$
$=$ (Q__)
$\alpha =$

f) −2000°
$\theta =$
$=$ (Q__)
$\alpha =$

Answers:

4. −505°	5. −865°	6. −790°	7. −642°	8. 1170°	9. −990°
10. a) 780°	b) 1210°	c) 560°	d) 1750°	e) 762°	f) 14°
g) 695°	h) −205°	i) −877°	j) −825°	k) −1000°	l) 0°
11. a) 140°;Q2	b) 310°;Q4	c) 55°;Q1	d) 185°;Q3	e) 200°;Q3	f) 154°;Q2
12. a) 290°;Q4	b) 160°;Q2	c) 320°;Q4	d) 20°;Q1	e) 260°;Q3	f) 160°;Q2
13. a) Q2 ; 55°	b) Q2 ; 11°	c) Q3 ; 61°	d) Q4 ; 42°	e) Q4 ; 84°	f) Q3 ; 87°
14. a) 50°	b) 35°	c) 80°	d) 36°	e) 83°	f) 20°