Spiral Review: Chapter 8 and 9 Solutions-Corrected I hope!

1a) $\sin\theta = \frac{9\sqrt{106}}{106}$, $\cos\theta = \frac{5\sqrt{106}}{106}$, $\tan\theta = \frac{9}{5}$

$\csc\theta = \frac{\sqrt{106}}{9}$, $\sec\theta = \frac{\sqrt{106}}{5}$, $\cot\theta = \frac{5}{9}$

1b) $\sin\theta = \frac{3}{10}$, $\cos\theta = \frac{\sqrt{91}}{10}$, $\tan\theta = \frac{3\sqrt{91}}{91}$

$\csc\theta = \frac{10}{3}$, $\sec\theta = \frac{10\sqrt{91}}{91}$, $\cot\theta = \frac{\sqrt{91}}{3}$

2) b = 3.32

A = 56.44°

B = 33.56°

3) 46.82 m

4) 18.7 ft

5) A = 120°, b = 1, c = 4.42

6a) two triangles

A_1 = 18.88°, C_1 = 146.12°, c_1 = 8.62 or

A_2 = 161.12°, C_2 = 3.88°, c_2 = 1.05

6b) B = 90°, C = 60°, c = 36.4

7) 304m

8) A = 21.8°, B = 60.1°, C = 98.1°

9) 55.1 ft
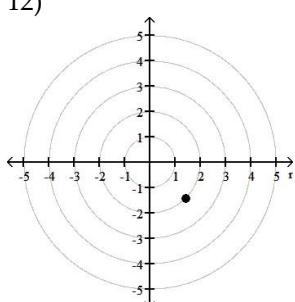
10 a) 26.80

10 b) 81.33
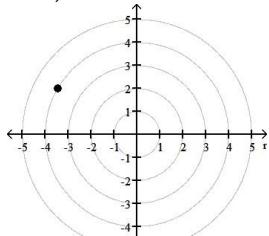
11 a) C

11 b) A

12)
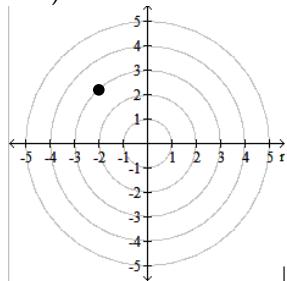
13A)

(a) $\left(4, -\frac{7\pi}{6}\right)$

(b) $\left(-4, \frac{11\pi}{6}\right)$

(c) $\left(4, \frac{17\pi}{6}\right)$

13B)

a) $\left(3, -\frac{5\pi}{4}\right)$

b) $\left(-3, -\frac{\pi}{4}\right)$

c) $\left(3, \frac{11\pi}{4}\right)$

14) $\left(\frac{9}{2}, \frac{-9\sqrt{3}}{2}\right)$

15a) $(3, \pi)$

15b) $\left(3\sqrt{2}, -\frac{\pi}{4}\right)$

16a) $r\cos^2\theta = 4\sin\theta$
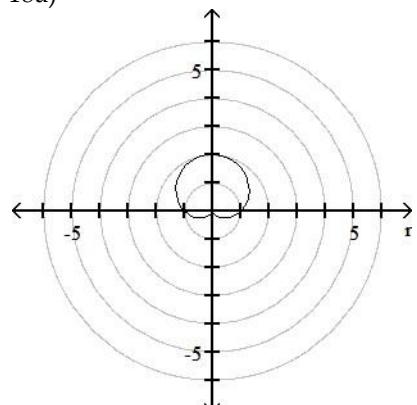
16b) $r = -3\sin\theta$

17a) $x^2 + y^2 = 2y - 2x$
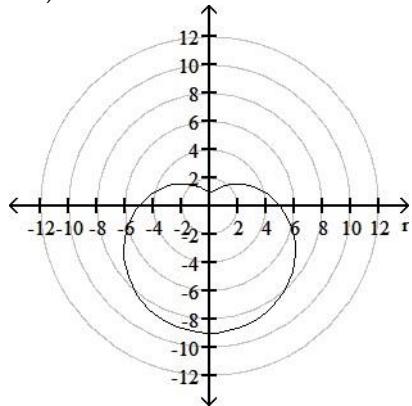
17b) y = 10\

17c) $(x-3)^2 + y^2 = 9$

18a)

cardioid
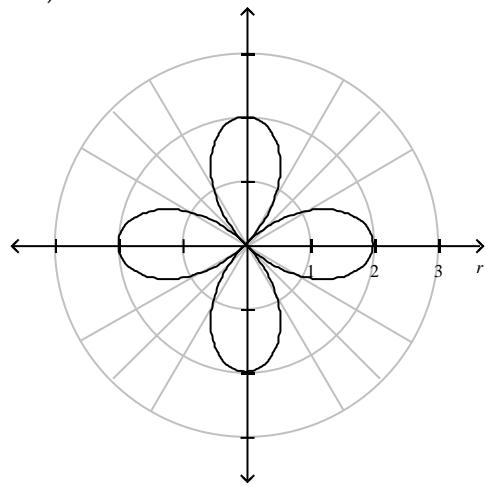
18b)
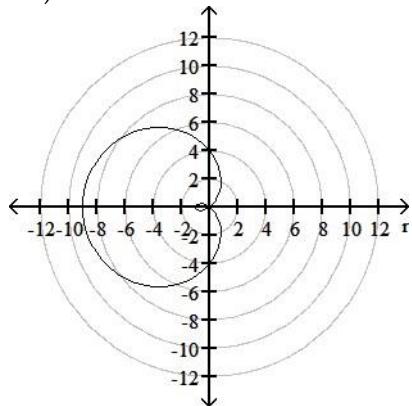
limacon without inner loop
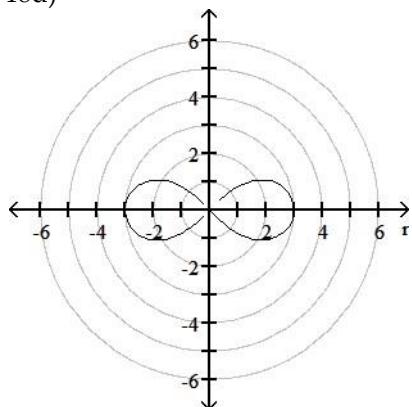
18c)

limacon with inner loop

18d)

Lemniscate

18e)

rose with four petals

19) **v** = 10**i** - 5**j**

20a) 6**i** + 4**j**

20b) 16**i** + 8**j**

20c) 10

21) $v = \frac{3}{2}i + \frac{3\sqrt{3}}{2}j$

22) 135°

23) a) $vj = -300j,\quad vw = 40(\cos 60\,i + \sin 60\,j) = 20i + 20\sqrt{3}j$ (N 30° E means a 60° angle off horizontal)

b) $vg = 20i + (20\sqrt{3} - 300)j$

c) 266mph, S 4.3° E

24) 52

25) 29.2°

26) Orthogonal

27) 4574.5 ft-lb