Arc Length- Worksheet

Find the length of the curve on the given interval.

1.
$$f(x) = x^{3/2}$$
 on $[0, 4]$.

6.
$$x(t) = a(t), y(t) = 9 \text{ on } [-1, 1].$$

2.
$$f(x) = \pi x + 8$$
 on $[0, 1]$.

7.
$$r = 1 + \cos \theta$$
 on $[0, \pi/3]$.

3.
$$f(x) = \frac{1}{2}ax^2$$
 on $\left[0, \frac{1}{a}\right]$.

8.
$$r = \sin \theta$$
 on $[0, \pi/2]$.

4.
$$x(t) = 4\sin(2t), \ y(t) = 4\cos(2t)$$
 on $[0, \pi/2].$

9.
$$r = \theta$$
 on $[0, \pi/2]$.

5.
$$x(t) = e^{2t} \sin t$$
, $y(t) = e^{2t} \cos t$ on $[0, 1]$.

10. If the arc length of
$$y = f(x)$$
 on $[a, b]$ is L find the arc length of $y = \frac{1}{\alpha} f(\alpha x)$ on $\left[\frac{a}{\alpha}, \frac{b}{\alpha}\right]$.

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