Arc Length- Worksheet

Find the length of the curve on the given interval.

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

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

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

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

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

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

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

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

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

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 $\left[\frac{a}{\alpha}, \frac{b}{\alpha}\right]$.
