1. $f(1) = 1$

   $f'(x) = 3x^2 \longrightarrow f'(1) = 3$

   $L(x) = 1 + 3(x - 1)$

2. $f(0) = \frac{1}{\sqrt{2}}$

   $f'(x) = -\frac{1}{2\sqrt{(2+x)^3}} \longrightarrow f'(0) = -\frac{1}{4\sqrt{2}}$

   $L(x) = \frac{1}{\sqrt{2}} - \frac{1}{4\sqrt{2}}(x - 0)$

3. $f(4) = \frac{1}{4}$

   $f'(x) = -\frac{1}{x^2} \longrightarrow f'(4) = -\frac{1}{16}$

   $L(x) = \frac{1}{4} - \frac{1}{16}(x - 4)$

4. $f(-8) = -2$

   $f'(x) = \frac{1}{3\sqrt[3]{x^2}} \longrightarrow f'(-8) = \frac{1}{12}$

   $L(x) = -2 + \frac{1}{12}(x + 8)$

5. $f(0) = 1$

   $f'(x) = \frac{1}{2\sqrt{1+x}} \longrightarrow f'(0) = \frac{1}{2}$

   $L(x) = 1 + \frac{1}{2}(x - 0)$

6. $f(0) = 0$

   $f'(x) = \cos x \longrightarrow f'(0) = 1$

   $L(x) = x$

7. $f(0) = 1$

   $f'(x) = -\frac{8}{(1+2x)^5} \longrightarrow f'(0) = -8$

   $L(x) = 1 - 8x$

8. $f(0) = 1$

   $f'(x) = -\dfrac{1}{2\sqrt{1-x}} \longrightarrow f'(0) = -\dfrac{1}{2}$

   $L(x) = 1 - \dfrac{1}{2}x$

   To find $\sqrt{0.9}$ we need to evaluate the linearization at an x such that $1 - x = .9 \longrightarrow x = .1$

   $L(.1) = .950 \therefore \sqrt{0.9} \approx .950$

   To find $\sqrt{0.99}$ we need to evaluate the linearization at an x such that $1 - x = .99 \longrightarrow x = .01$

   $L(.01) = .995 \therefore \sqrt{0.99} \approx .995$

9. $g(0) = 1$

   $g'(x) = \dfrac{1}{3\sqrt[3]{(1+x)^2}} \longrightarrow g'(0) = \dfrac{1}{3}$

   $L(x) = 1 + \dfrac{1}{3}x$

   To find $\sqrt[3]{0.95}$ we need to evaluate the linearization at an x such that $1 + x = .95 \longrightarrow x = -.05$

   $L(-.05) = .983 \therefore \sqrt[3]{0.95} \approx .983$

   To find $\sqrt[3]{1.1}$ we need to evaluate the linearization at an x such that $1 + x = 1.1 \longrightarrow x = .1$

   $L(.1) = 1.033 \therefore \sqrt[3]{1.1} \approx 1.033$