Single Pure - Hard Tangents & Normals

If patrons can do this, then you have probably mastered what is going on.

1. Find equation of tangent to $y = \sqrt{x} + \frac{1}{\sqrt{x}}$ when

(a)
$$x = 1$$
.

(b)
$$x = 4$$
.

(c)
$$x = 2$$
.

2. Find equation of normal to $y = \sqrt{x} + \frac{1}{x}$ when

(a)
$$x = 1$$
.
(b) $x = 4$.

(b)
$$x = 4$$
.
(c) $x = 2$.

3. Find equation of tangent to $y = 2\sqrt{x} - \frac{4}{\sqrt{x}}$ when

(a)
$$x = 1$$
.

(b)
$$x = 4$$
.
(c) $x = 2$.

4. Find equation of normal to $y = \sqrt{2}\sqrt{x} + \frac{1}{2\sqrt{x}}$ when

(a)
$$x = 1$$
.
(b) $x = 4$.

(c)
$$x = 2$$
.