PREC11
Quiz5.2A/5.2B(F)

Name Key

Clearly show all work.

1. State the restriction on the variable in each radical expression:

a) $\sqrt{3x}$

$3x \geq 0$
$x \geq 0$

b) $\sqrt[3]{5-x}$

No restrictions

c) $\sqrt[4]{3x-1}$

$3x-1 \geq 0$
$3x \geq 1$
$x \geq \frac{1}{3}$

d) $\sqrt{6-2x}$

$6-2x \geq 0$
$-2x \geq -6$
$x \leq 3$

e) $\sqrt[6]{x^2+3}$

No restrictions

2. Simplify:

a) $(3\sqrt{8x})(-2\sqrt{3x})$

$-6\sqrt{24x^2}$
$-6\sqrt{4x^2}\sqrt{6}$
$-6(2x)\sqrt{6}$
$-12x\sqrt{6}$

b) $-2\sqrt{5y}(\sqrt{3}-3\sqrt{2y})$

$-2\sqrt{15y}+6\sqrt{10y^2}$
$-2\sqrt{15y}+6y\sqrt{10}$

c) $(4\sqrt{3}+2\sqrt{5})(\sqrt{3}-3\sqrt{5})$

$4\sqrt{9}-12\sqrt{15}+2\sqrt{15}-6\sqrt{25}$
$4(3)-10\sqrt{15}-6(5)$
$-18-10\sqrt{15}$

d) $(5\sqrt{2}+\sqrt{6})^2$

$(5\sqrt{2}+\sqrt{6})(5\sqrt{2}+\sqrt{6})$
$25\sqrt{4}+5\sqrt{12}+5\sqrt{12}+\sqrt{36}$
$50+10\sqrt{12}+6$
$56+10\sqrt{4}\sqrt{3}$
$56+20\sqrt{3}$

e) $\frac{\overset{2}{\cancel{6}}\sqrt{15}\,3}{\underset{1}{\cancel{3}}\sqrt{5}_{1}}$

$2\sqrt{3}$

f) $\frac{\overset{3}{\cancel{12}}\sqrt{3}\,1}{\underset{2}{\cancel{8}}\sqrt{75}\,25}$

$= \frac{3\sqrt{1}}{2\sqrt{25}}$

$= \frac{3}{2(5)}$

$= \frac{3}{10}$

g) $\frac{4\sqrt{8}}{\sqrt{10}2} \cdot = \frac{4}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$= \frac{4\sqrt{2}}{2}$

$= 2\sqrt{2}$

h) $\frac{2+\sqrt{3}}{3\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}}$

$\frac{2\sqrt{5}+\sqrt{15}}{3\sqrt{25}}$

$\frac{2\sqrt{5}+\sqrt{15}}{15}$

i) $\frac{3}{3-\sqrt{2}} \cdot \frac{3+\sqrt{2}}{3+\sqrt{2}}$

$\frac{9+3\sqrt{2}}{9+3\sqrt{2}-3\sqrt{2}-\sqrt{4}}$

$\frac{9+3\sqrt{2}}{7}$

j) $\frac{\sqrt{6}}{2+3\sqrt{3}} \cdot \frac{2-3\sqrt{3}}{2-3\sqrt{3}}$

$\frac{2\sqrt{6}-3\sqrt{18}}{4-6\sqrt{3}+6\sqrt{3}-9\sqrt{9}}$

$\frac{2\sqrt{6}-3\sqrt{9}\sqrt{2}}{4-27}$

$\frac{2\sqrt{6}-9\sqrt{2}}{-23}$