

Key / Odd

## #8 Simplifying Radical Expressions

Simplify each and state the excluded values.

$$1) \frac{72x^4}{54x^3} = \frac{4x}{3}$$

$$2) \frac{48x^2}{60x^3}$$

$$3) -\frac{20v^2}{15v} = \frac{-4v}{3}$$

$$4) \frac{30k^2}{12k^4}$$

Simplify each expression.

$$5) \frac{3n^2 + 24n}{n^2 + 3n - 40} = \frac{3n \cancel{(n+8)}}{\cancel{(n+8)}(n-5)} = \frac{3n}{(n-5)}$$

$$6) \frac{-n^2 + 12n - 35}{n^2 - 4n - 21}$$

$$7) \frac{5n^3 + 50n^2 + 45n}{4n^3 + 26n^2 - 90n} = \frac{5n(n^2 + 10n + 9)}{2n(2n^2 + 13n - 45)} = \frac{5n(n+1)(n+9)}{2n(n+9)(n-5)} = \frac{5(n+1)}{2(n-5)}$$

$$8) \frac{7p^2 - 15p + 8}{15p^3 - 3p^2 - 12p}$$

$$9) \frac{7}{6} \cdot \frac{7p^2}{5} = \frac{49p^2}{30}$$

$$10) \frac{7}{9} \cdot \frac{8}{5r}$$

$$11) \frac{4v^3 + 20v^2}{v-5} \cdot \frac{v^2 - 25}{4v^3 + 20v^2}$$

$$= \frac{\cancel{4v^2} (v+5)}{(v-5)} \cdot \frac{(v+5)(\cancel{v-5})}{\cancel{4v^2} (v+5)}$$

$$= \boxed{v+5}$$

$$12) \frac{4n-8}{n^2+12n+32} \cdot \frac{16-6n-n^2}{4n-8}$$

$$13) 20n \cdot \frac{-n^2 + 12n - 32}{n^2 - 12n + 32}$$

$$\frac{20n}{1} \cdot \frac{-1(n-4)(n-8)}{(n-4)(n-8)}$$

$$\boxed{-20n}$$

$$14) \frac{x^2 + 2x - 3}{x+9} \cdot \frac{24x^2}{3-2x-x^2}$$

$$15) \frac{5}{7} \div \frac{9p^2}{2}$$

$$\frac{5}{7} \cdot \frac{2}{9p^2} = \boxed{\frac{10}{63p^2}}$$

$$16) \frac{3}{6a^2} \div \frac{6}{10}$$

$$17) \frac{7n^3 - 28n^2}{n-3} \div \frac{n^2 - 16}{n^2 - 7n + 12}$$

$$\frac{7n^2(n-4)}{(n-3)} \cdot \frac{(n-3)(n-4)}{(n+4)(n-4)}$$

$$\boxed{\frac{7n^2(n-4)}{(n+4)}}$$

$$18) \frac{3v^2 + 21v}{18} \div \frac{3v^2 + 21v}{v+5}$$

$$19) \frac{a^2 - 3a - 10}{a^2 - 13a + 40} \div \frac{a+2}{8a^3 + 80a^2}$$

$$\frac{(a-5)(a+2)}{(a-5)(a-8)} \cdot \frac{8a^2(a+10)}{(a+2)}$$

$$\boxed{\frac{8a^2}{a-8}}$$

$$20) \frac{21n+70}{12n+40} \div \frac{n^2+2n-80}{80-2n-n^2}$$