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MAT111 INDICES, SURDS AND COMPLEX NUMBERS

PRACTICE QUESTIONS

Simplify the following:

(a)  $9x^{-3}$  multiply by  $2x^5$

(b)  $(2d^3)^2$

(c)  $2a^3 / a^4$

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(d)  $(32n)^{1/5}$

(e)  $(2^3)^{-2}$

(f)  $8^{2/3}$

(g)  $(1/9)^{-1/2}$

(h)  $(ab^{-3})^2$

(i)  $4^3 / 4^5$

(j)  $2^6$  multiply by  $2^{-6}$

(k)  $27^{-2/3}$

Simplify the following by rationalizing the denominators:

1.  $2/\sqrt{3}$

2.  $21/\sqrt{7}$

3.  $10\sqrt{2}/\sqrt{12}$

4.  $2\sqrt{5}/\sqrt{10}$

5.  $4\sqrt{5}/3\sqrt{10}$

6.  $2\sqrt{18}/3\sqrt{12}$

7.  $2\sqrt{3} - (6/\sqrt{3}) + (3/\sqrt{2})$

$$8 \sqrt{3\sqrt{15} \times 2\sqrt{22}} / (7\sqrt{2} \times \sqrt{165})$$

$$9. (5\sqrt{3} - 3\sqrt{5}) / (2\sqrt{5} + \sqrt{3})$$

$$10. (\sqrt{6} + 2\sqrt{2}) / (\sqrt{6} - 2\sqrt{2})$$

$$11. (3\sqrt{8} \times 5\sqrt{3} \times \sqrt{7}) / (\sqrt{42} \times 2\sqrt{3} \times \sqrt{15})$$

Simplify:

$$(a) 65i + 7i$$

$$(b) 18i - 12i$$

$$(c) (i)(2i)(4i)(3i^2)$$

$$(d) i^{12}$$

$$(e) i^{19}$$

$$(f) \sqrt{-64}$$