Worksheet #20 Section 5.1 — Integer Exponent Problems

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Simplify each of the following leaving no negative exponents in your final answer.

(1) 5^2

(2) x^{-3}

(3) $x^{-4}\,x^7$

(4) $-2\,x^{-3}$

(5) 3^3

(6) $x^2\,x^3$

(7) $\left(\frac{a}{b}\right)^{-1}$

(8) $\left(\frac{2}{x}\right)^3$

(9) $\left(2\,x^3\right)\,\left(5\,x^2\right)$

(10) $\left(-3\,x^3\right)\,\left(5\,x^7\right)$

(11) $3\,x^{-6}\,x^3$

(12) $(2\,x\,y)\,\left(5\,x^2\,y^6\right)$

(13) $-4\,x^2\,y\,\left(2\,x^3\,y^5\right)$

(14) x^{-2}

(15) 2^{-3}

(16) $\left(\frac{2}{3}\right)^3$

(17) $\left(\frac{3}{5}\right)^{-2}$

(18) $\left(5\,\frac{x}{y^3}\right)^2$

(19) $\left(x^2\right)^3$

(20) $3^2\,2^3$

(21) $\frac{x^{-2}}{-3}$

(22) $\left(\frac{1}{x}\right)^{-1}$

(23) $\frac{1}{x^{-3}}$

(24) $\left(x^3\right)^{-2}$

(25) $\left(x^{-2}\right)^{-5}$

(26) 6^{-1}

(27) $2\,x^3\,\left(x^4\right)$

(28) $\left(2\,x^3\right)^2$

(29) $\left(\frac{2}{x^{-2}}\right)^{-3}$

(30) $\left(2\,y^3\right)^2$

(31) $\frac{x^5}{x^3}$

(32) 5^{-2}

(33) 2^{-3}

(34) $\frac{x^2}{x^3}$

(35) $(-4)^{-2}$

(36) $\frac{-2\,y^{-2}}{x^{-4}}$

(37) $\left(x^2\,y^3\right)^3$

(38) -3^2

(39) $\frac{3^2}{x^3}$

(40) $2\,x^{-2}$

(41) $-2\,x^{-1}$

(42) $\frac{4}{x^{-2}}$

(43) 3^{-2}

(44) $\frac{3^2}{x^{-1}}\,(2\,x\,y)^2\,\left(3\,x\,y^2\right)^{-3}$

(45) $(-3)^2$

(46) $(-2)^3$

(47) 5^0

(48) $\frac{t^{-3}}{-2}$

(49) 8^{-1}

(50) 5^{-2}

(51) $\frac{1}{3^{-1}}$

(52) 8^{-2}

(53) $x^5\,x^{-2}$

(54) $\left(x^{-2}\right)^{-2}$

(55) $\left(x^3\right)^{-2}$

(56) $\frac{x^2\,x^4}{x^5}$

(57) $\left(2\,x^{-2}\right)^3$

(58) $\left(2\,x^{-2}\right)^{-3}$

(59) $\left(3^2\right)\,\left(2^3\right)$

(60) $5^7\,5^{-5}$

(61) $\dfrac{1}{2\,x^{-2}}$

(62) $\left(2\,x^3\right)\,\left(3\,x\,y^2\right)$

(63) $\dfrac{x^{-4}}{x^{-2}}$

(64) $\dfrac{z^4}{2\,z^{-3}}$

(65) $\dfrac{2\,y^{-3}}{y^{-7}}$

(66) $3\,x^{-3}$

(67) $\dfrac{x^{-5}\,y^{-1}}{x^6\,y^{-2}}$

(68) $\dfrac{x^7\,y^2}{x^5\,y^5}$

(69) $\left(3\,x^2\,y^{-1}\right)^4$

(70) $\left(x^{-2}\right)^3$

(71) $5\left(x^3\right)^{-2}$

(72) $\left(-2\,x\,y^2\right)^{-1}$

(73) $\left(\dfrac{2}{3}\right)^{-1}$

(74) $\left(\dfrac{3}{2}\right)^3$

(75) $\left(\dfrac{4}{9}\right)^{-2}$

(76) $\left(2\,x^{-3}\,y^2\right)^{-2}$

(77) 7^{-2}

(78) $-3\,x^{-2}$

(79) $x^{-4}\,(2\,x)^{-1}$

(80) -5^{-2}

(81) $(-3)^{-2}$

(82) $\left(2\,z^{-1}\right)^{-1}$

(83) $\left(s^{-3}\right)^{-1}$

(84) $\dfrac{x^{-3}}{x^4}$

(85) $\left(x^2\,y^{-1}\right)^{-3}$

(86) $\dfrac{y^{-3}\,x^2}{y^4\,x^{-3}}$

(87) $5^{-1}\,3^2$

(88) $\dfrac{2^{-3}}{3^{-2}}$

(89) $\left(x^2\,y^{-2}\right)^{-4}$

(90) $2^{-1}\,3^2$

(91) $-3\left(x^{-1}\right)^2$

(92) $\dfrac{1}{x^2\,y^{-3}}$

(93) $\left(\dfrac{x^{-3}}{x^{-5}}\right)^{-2}$

(94) $\dfrac{-3}{x^4}$

(95) $\left(\dfrac{x^{-2}}{y^3}\right)^3$

(96) $\left(-2\,\dfrac{a^{-3}}{b^{-1}}\right)^{-2}$

(97) $\left(\dfrac{-4}{x^2}\right)^{-3}$

(98) $\dfrac{3^{-2}}{5^2}$

(99) $3^{-2}\,x^{-1}$

Answers: (1) 25 (2) $\frac{1}{x^3}$ (3) x^3 (4) $\frac{-2}{x^3}$ (5) 27 (6) x^5 (7) $\frac{b}{a}$ (8) $\frac{8}{x^3}$

(9) $10\,x^5$ (10) $-15\,x^{10}$ (11) $\frac{3}{x^3}$ (12) $10\,x^3\,y^7$ (13) $-8\,x^5\,y^6$ (14) $\frac{1}{x^2}$ (15) $\frac{1}{8}$

(16) $\frac{8}{27}$ (17) $\frac{25}{9}$ (18) $\frac{25\,x^2}{y^6}$ (19) x^6 (20) 72 (21) $\frac{-1}{3\,x^2}$ (22) x (23) x^3

(24) $\frac{1}{x^6}$ (25) x^{10} (26) $\frac{1}{6}$ (27) $2\,x^7$ (28) $4\,x^6$ (29) $\frac{1}{8\,x^6}$ (30) $4\,y^6$ (31) x^2

(32) $\frac{1}{25}$ (33) $\frac{1}{8}$ (34) $\frac{1}{x}$ (35) $\frac{1}{16}$ (36) $\frac{-2\,x^4}{y^2}$ (37) $x^6\,y^9$ (38) -9 (39) $\frac{9}{x^3}$

(40) $\frac{2}{x^2}$ (41) $\frac{-2}{x}$ (42) $4\,x^2$ (43) $\frac{1}{9}$ (44) $\frac{4}{3\,y^4}$ (45) 9 (46) -8 (47) 1

(48) $\frac{-1}{2\,t^3}$ (49) $\frac{1}{8}$ (50) $\frac{1}{25}$ (51) 3 (52) $\frac{1}{64}$ (53) x^3 (54) x^4 (55) $\frac{1}{x^6}$

(56) x (57) $\frac{8}{x^6}$ (58) $\frac{x^6}{8}$ (59) 72 (60) 25 (61) $\frac{x^2}{2}$ (62) $6\,x^4\,y^2$ (63) $\frac{1}{x^2}$

(64) $\frac{z^7}{2}$ (65) $2\,y^4$ (66) $\frac{3}{x^3}$ (67) $\frac{y}{x^{11}}$ (68) $\frac{x^2}{y^3}$ (69) $\frac{81\,x^8}{y^4}$ (70) $\frac{1}{x^6}$ (71) $\frac{5}{x^6}$

(72) $\frac{-1}{2\,x\,y^2}$ (73) $\frac{3}{2}$ (74) $\frac{27}{8}$ (75) $\frac{81}{16}$ (76) $\frac{x^6}{4\,y^4}$ (77) $\frac{1}{49}$ (78) $\frac{-3}{x^2}$ (79) $\frac{1}{2\,x^5}$

(80) $-\frac{1}{25}$ (81) $\frac{1}{9}$ (82) $\frac{z}{2}$ (83) s^3 (84) $\frac{1}{x^7}$ (85) $\frac{y^3}{x^6}$ (86) $\frac{x^5}{y^7}$ (87) $\frac{9}{5}$

(88) $\frac{9}{8}$ (89) $\frac{y^8}{x^8}$ (90) $\frac{9}{2}$ (91) $\frac{-3}{x^2}$ (92) $\frac{y^3}{x^2}$ (93) $\frac{1}{x^4}$ (94) $\frac{-3}{x^4}$ (95) $\frac{1}{x^6\,y^9}$

(96) $\frac{a^6}{4\,b^2}$ (97) $\frac{-x^6}{64}$ (98) $\frac{1}{225}$ (99) $\frac{1}{9\,x}$