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16/10/2022
15 minutes

Convert the following to the indicated bases. Show all the steps leading to the final answer.

(*a*) $(375.450)_8 = (\ldots\ldots)_{10}$

$$= 3*8^2 + 7*8^1 + 5*8^0 + 4*8^{-1} + 5*8^{-2}$$
$$= 192 + 56 + 5 + 0.5 + 0.078125 = (253.578125)_{10}$$

(*b*) $(73.312)_{10} = (\ldots\ldots)_5$ → *Fraction up to* 3 *digits*

Integer	Quotient	Coefficient
73 / 5	14	3
14 / 5	2	4
2 / 5	0	2 ↑
$=(243)_5$		

	Integer		Fraction	Coefficient
0.312*5	=1	•	56	1 ↓
0.56*5	=2	•	8	2
0.8*5	=4	•	0	4
$=(0.124)_2$				

$$(73.312)_{10} = (243.124)_2$$

(*c*) $(525)_6 = (\ldots\ldots)_2$

$$= 5*6^2 + 2*6^1 + 5*6^0$$
$$= 180 + 12 + 5 = (197)_{10}$$

Integer	Quotient	Coefficient
197 / 2	98	1
98 / 2	49	0
49 / 2	24	1
24 / 2	12	0
12 / 2	6	0
6 / 2	3	0
3 / 2	1	1
1 / 2	0	1 ↑

$= (11000101)_2$

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Convert the following to the indicated bases. Show all the steps leading to the final answer.

(*a*) $(436.024)_8 = (\ldots\ldots\ldots\ldots)_{10}$

$$= 4*8^2 + 3*8^1 + 6*8^0 + 0*8^{-1} + 2*8^{-2} + 4*8^{-3}$$
$$= 256 + 24 + 6 + 0 + 0.03125 + 0.0078125 = (286.0390625)_{10}$$

(*b*) $(149.125)_{10} = (\ldots\ldots\ldots\ldots)_7$ → *Fraction up to 4 digits*

Integer	Quotient	Coefficient
149 / 7	21	2
21 / 7	3	0
3 / 7	0	3 ↑
$= (302)_7$		

	Integer		Fraction	Coefficient
0.125*7	= 0	•	875	0 ↓
0.875*7	= 6	•	125	6
0.125*7	= 0	•	875	0
0.875*7	= 6	•	125	6
$= (0.0606)_7$				

$$(149.125)_{10} = (302.0606)_7$$

(*c*) $(324)_5 = (\ldots\ldots\ldots\ldots)_2$

$$= 3*5^2 + 2*5^1 + 4*5^0$$
$$= 75 + 10 + 4 = (89)_{10}$$

Integer	Quotient	Coefficient
89 / 2	44	1
44 / 2	22	0
22 / 2	11	0
11 / 2	5	1
5 / 2	2	1
2 / 2	1	0
1 / 2	0	1 ↑

$= (1011001)_2$

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Convert the following to the indicated bases. Show all the steps leading to the final answer.

(*a*) $(513.304)_7 = (\ldots\ldots\ldots\ldots)_{10}$

$= 5x7^2 + 1x7^1 + 3x7^0 + 3x7^{-1} + 0x7^{-2} + 4x7^{-3}$

$= 245 + 7 + 3 + 0.42857 + 0 + 0.01166 = (255.44023)_{10}$

(*b*) $(275.68)_{10} = (\ldots\ldots\ldots\ldots)_{16}$ → *Fraction up to 4 digits*

Integer	Quotient	Coefficient
275 / 16	17	3
17 / 16	1	1
1 / 16	0	1↑
$= (113)_{16}$		

	Integer		Fraction	Coefficient
0.68*16	= 10	•	88	10↓
0.88*16	= 14	•	08	14
0.08*16	= 1	•	28	1
0.28*16	= 4	•	48	4
$= (.AE14)_{16}$				

$(275.68)_{10} = (113.AE14)_{16}$

(*c*) $(324)_6 = (\ldots\ldots\ldots\ldots)_2$

$= 3*6^2 + 2*6^1 + 4*6^0$

$= 108 + 12 + 4 = (124)_{10}$

Integer	Quotient	Coefficient
124 / 2	62	0
62 / 2	31	0
31 / 2	15	1
15 / 2	7	1
7 / 2	3	1
3 / 2	1	1
1 / 2	0	1↑

$= (1111100)_2$

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Convert the following to the indicated bases. Show all the steps leading to the final answer.

(*a*) $(451.032)_6 = (\ldots\ldots)_{10}$

$$= 4x6^2 + 5x6^1 + 1x6^0 + 0x6^{-1} + 3x6^{-2} + 2x6^{-3}$$
$$= 144 + 30 + 1 + 0 + 0.08333 + 0.00926 = (175.09259)_{10}$$

(*b*) $(257.64)_{10} = (\ldots\ldots)_8$ → *Fraction up to 4 digits*

Integer	Quotient	Coefficient
257 / 8	32	1
32 / 8	4	0
4 / 8	0	4 ↑
$= (401)_8$		

	Integer		Fraction	Coefficient
0.64*8	= 5	•	12	5 ↓
0.12*8	= 0	•	96	0
0.96*8	= 7	•	68	7
0.68*8	= 5	•	44	5
$= (.5075)_8$				

$$(257.64)_{10} = (401.5075)_{16}$$

(*c*) $(264)_7 = (\ldots\ldots)_2$

$$= 2*7^2 + 6*7^1 + 4*7^0$$
$$= 98 + 42 + 4 = (144)_{10}$$

Integer	Quotient	Coefficient
144 / 2	72	0
72 / 2	36	0
36 / 2	18	0
18 / 2	9	0
9 / 2	4	1
4 / 2	2	0
2 / 2	1	0
1 / 2	0	1 ↑

$= (10010000)_2$