Revising Johnson's table for the 21st century – current table

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We try to keep Johnson's table as up-to-date as possible. Please feel free to send us additions and corrections at celina@cos.ufrj.br.

GRAPH CLASS	MEMBER	INDSET	CLIQUE	CLIPAR	CHRNUM	CHRIND	HAMCIR	DOMSET	MAXCUT	STTREE	GRAPHISO
TREES/FORESTS	P [T]	P [GJ]	P [T]	P [GJ]	P [T]	P [GJ]	P [T]	P [GJ]	P [GJ]	P [T]	P [GJ]
ALMOST TREES (k)	P [OG]	P [OG]	P [T]	**P [105]**	**P [5]**	**P [17]**	**P [5]**	P [5]	**P [20]**	**P [76]**	**P [17]**
PARTIAL k-TREES	P [OG]	P [5]	P [T]	**P [105]**	P [5]	**P [17]**	P [5]	P [5]	**P [20]**	**P [76]**	**P [17]**
BANDWIDTH-k	P [OG]	P [OG]	P [T]	**P [105]**	P [5]	**P [17]**	**P [5]**	P [5]	P [OG]	**P [76]**	P [OG]
DEGREE-k	P [T]	N [GJ]	P [T]	N [29]	N [GJ]	N [OG]	N [GJ]	N [GJ]	N [GJ]	N [GJ]	P [OG]
PLANAR	P [GJ]	N [GJ]	P [T]	N [78]	N [GJ]	O	N [GJ]	N [GJ]	P [GJ]	N [OG]	P [GJ]
SERIES PARALLEL	P [OG]	P [OG]	P [T]	**P [105]**	P [5]	P [17]	P [5]	P [OG]	P [GJ]	P [OG]	P [GJ]
OUTERPLANAR	P [OG]	P [OG]	P [T]	P [OG]	P [OG]	P [OG]	P [T]	P [OG]	P [GJ]	P [OG]	P [GJ]
HALIN	P [OG]	P [OG]	P [T]	P [OG]	P [5]	P [17]	P [T]	P [OG]	P [GJ]	**P [118]**	P [GJ]
k-OUTERPLANAR	P [OG]	P [OG]	P [T]	P [OG]	P [5]	**P [17]**	P [OG]	P [OG]	P [GJ]	**P [76]**	P [GJ]
GRID	P [OG]	P [GJ]	P [T]	P [GJ]	P [T]	P [GJ]	N [OG]	N [32]	P [T]	N [OG]	P [GJ]
$K_{3,3}$-FREE*	P [OG]	N [GJ]	P [T]	N [78]	N [GJ]	O?	N [GJ]	N [GJ]	P [OG]	N [GJ]	**P [40]**
THICKNESS-k	N [OG]	N [GJ]	P [T]	N [78]	N [GJ]	N [OG]	N [GJ]	N [GJ]	N [119]	N [GJ]	**I** [RJ]
GENUS-k	P [OG]	N [GJ]	P [T]	N [78]	N [GJ]	O?	N [GJ]	N [GJ]	O?	N [GJ]	P [OG]
PERFECT	**P [34]**	P [OG]	P [OG]	P [OG]	P [OG]	**N [28]**	N [OG]	N [OG]	**N [20]**	N [GJ]	I [84]
CHORDAL	P [OG]	P [OG]	P [OG]	P [OG]	P [OG]	O?	N [93]	N [OG]	**N [20]**	N [OG]	I [84]
SPLIT	P [OG]	P [OG]	P [OG]	P [OG]	P [OG]	O?	N [93]	N [OG]	**N [20]**	N [OG]	I [108]
STRONGLY CHORDAL	P [OG]	P [OG]	P [OG]	P [OG]	P [OG]	O?	**N [93]**	P [OG]	**N [109]**	P [OG]	**I [111]**
COMPARABILITY	P [OG]	P [OG]	P [OG]	P [OG]	P [OG]	**N [28]**	N [OG]	N [94]	**N [102]**	N [GJ]	I [22]
BIPARTITE	P [T]	P [GJ]	P [T]	P [GJ]	P [T]	P [GJ]	N [OG]	N [94]	P [T]	N [GJ]	I [22]
PERMUTATION	P [OG]	P [OG]	P [OG]	P [OG]	P [OG]	O?	**P [44]**	P [OG]	**N [120]**	P [OG]	P [OG]
COGRAPHS	P [T]	P [OG]	P [OG]	P [OG]	P [OG]	O?	P [OG]	P [OG]	**P [20]**	P [OG]	P [OG]
UNDIRECTED Path	P [OG]	P [OG]	P [OG]	P [OG]	P [OG]	O?	**N [13]**	N [OG]	**N [20]**	**N** [RJ]	I [22]
DIRECTED PATH	P [OG]	P [OG]	P [OG]	P [OG]	P [OG]	O?	**N [99]**	P [OG]	**N [1]**	P [OG]	**P [7]**
INTERVAL	P [OG]	P [OG]	P [OG]	P [OG]	P [OG]	O?	P [OG]	P [OG]	**N [1]**	P [OG]	P [OG]
CIRCULAR ARC	P [OG]	P [OG]	P [OG]	P [OG]	N [OG]	O?	**P [106]**	P [OG]	**N [1]**	P [11]	**P [80]**
CIRCLE	P [OG]	P [GJ]	P [OG]	**N [73]**	N [OG]	O?	***N [39]***	**N [71]**	**N [26]**	P [OG]	**P [68]**
PROPER CIRC. ARC	P [OG]	P [OG]	P [OG]	P [OG]	P [OG]	O?	P [OG]	P [OG]	O?	P [11]	**P [82]**
EDGE (OR LINE)	P [OG]	P [GJ]	P [T]	N [95]	N [OG]	**N [28]**	N [OG]	N [GJ]	**P [59]**	N [19]	I [OG]
CLAW-FREE	P [T]	P [OG]	**N [103]**	N [85]	N [OG]	**N [28]**	N [OG]	N [GJ]	**N [20]**	N [19]	I [OG]

Table 1: The updated NP-Completeness Column: An Ongoing Guide table 35 years later. Depicted in bold are the references that correspond to unresolved entries in [OG] and [GJ]. The references not in bold confirm resolved entries from [OG] or [GJ], that we updated either because they cited private communications, because the cited reference is not easily accessible, or could not be confirmed. There is one entry highlighted in italic that corrects the entry for HAMCIRC restricted to CIRCLE GRAPHS. We keep the abbreviations used by [OG], namely for entries: P = Polynomial-time solvable; N = NP-complete; I = Open, but equivalent in complexity to general GRAPH ISOMORPHISM; O? = Apparently open, but possibly easy to resolve; and O = Open, and may well be hard; and for references [T] = Restriction trivializes the problem. Here [GJ] = the Guide [53]; [OG] = the Ongoing guide [66], and [RJ] = original paper [121]; please refer to these references for the definitions of the problems and graph classes.

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